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DISEASES CAUSED BY BACTERIA AND FUNGI

FRIEDLANDER, H., HABERMANN, R. T. & PARR, L. W. (1951.) **Experimental arthritis in albino rats and mice produced by alpha type streptococci.**—*J. infect. Dis.* **88.** 298-304. [Authors' summary copied *verbatim.*] 3440

Two strains of alpha type *Streptococcus* have been isolated culturally which produce a high incidence of polyarthritis in albino rats and mice when injected intravenously in suitable amounts. The cultural characteristics and biochemical reactions of the organisms are given. The disease produced in albino rats and mice with these strains is described.

HORSFALL, F. L., JR. (1951.) **Studies on non-hemolytic streptococci isolated from the respiratory tract of man. The antigenic basis for type specific reactions with *Streptococcus salivarius* and non-levan-forming streptococci.**—*J. exp. Med.* **93.** 229-245. 3441

Certain non-haemolytic streptococci resemble capsulated pneumococci in their antigenic structure. *Str. salivarius* type I and type II produce type-specific capsular poysaccharides. If grown in a medium containing saccharose they produce, in addition, a levan (a sugar anhydride which yields fructose on hydrolysis). This latter is also produced by R-forms grown in saccharose, and by serological tests is identical in all types which produce it.

—A. MAYR-HARTING.

I. PATTISON, I. H. & HOLMAN, H. H. (1951.) **Studies on experimental streptococcal mastitis. IV. The disease caused by inoculation of *Streptococcus agalactiae* strain S13 into the teat canal of goats.**—*J. comp. Path.* **61.** 26-37. [Authors' summary modified.] 3442

II. PATTISON, I. H. (1951.) **Studies on experimental streptococcal mastitis. V. Histological findings in experimental streptococcal mastitis in the goat.**—*J. comp. Path.* **61.** 71-87. [Abst. from author's summary.] 3443

I. It was possible to control the speed of reaction to infection of goats inoculated into the teat canal with living strain S13 streptococci. The speed of reaction depended apparently on the number of living organisms inoculated; and a delayed reaction followed inoculation of about 1,000 living organisms contained in 3·0 ml. of saline and 7·0 ml. of Todd-Hewitt broth.

The course of the disease in goats was studied up to a period of 11 weeks after inoculation. No indirect test was completely reliable in detecting infection, but that found most sensitive was the leucocyte count in milk.

Bacteriological examination after death of experimentally-infected goats revealed the presence of *Str. agalactiae* in the supramammary lymphatic glands of inoculated sides of udders in four out of 13 cases.

A dark colony variant of the strain of *Str. agalactiae* inoculated into the teat canal of goats was isolated in considerable numbers from the milk of two animals.

Examinations of the udder and tests of the milk over a period of 11 weeks, failed to reveal any essential difference between the experimental condition caused by inoculation of *Str. agalactiae* into the teat canal of goats and naturally occurring bovine streptococcal mastitis as described in the literature. It is suggested, therefore, that this experimental condition in goats could be used for the elucidation of many problems concerned with bovine streptococcal mastitis.

II. Inoculations of heat-killed or living *Str. agalactiae* strain S13 were made into the teat canal of one side of the udder of 39 goats and a histological examination was made of the udders.

The reaction to heat-killed organisms was a slight, patchy and transient migration of neutrophiles into secreting acini. Histological findings in animals inoculated with living streptococci varied according to the type of reaction. Details of these reactions are given.

LOFTHOUSE, F. (1951.) *Vibrio foetus* **infection in a dairy herd.**—*Vet. Rec.* **63.** 125-127. 3444

A clinical history was given of a herd which had had breeding troubles involving some abortions but more frequently post-calving and post-service vaginal discharges, many cows and heifers failing to conceive. *V. fetus* was recovered from the stomachs of two aborted foetuses. Agglutinins for *V. fetus* were detected in the sera of some animals. A bull was involved in the transmission of the disease. Following treatment of the bull and cows with penicillin, the cows conceived and the breeding became normal.—L. M. JONES.

DOBBS, E. M. & MCINTYRE, R. W. (1951.) **A case report of vibrionic abortion in a goat herd.**—*Calif. Vet.* **4.** 19. 3445

Vibrio fetus was isolated from the stomach and liver of an aborted goat foetus from a herd in which abortions had occurred.—L. M. JONES.

COLE, C. R. (1949.) **Vibrionic dysentery of swine.**—*Proc. 18th Ann. Conf. Veterinarians, Ohio.* pp. 96-98. 3446

An outbreak of dysentery associated with *Vibrio coli* infection among 350 pigs is described. Of a batch of 185 weighing 25–30 lb., 150 developed diarrhoea, this being regarded as an early stage of *V. coli* infection. Dietary change produced no improvement and 20 died within five days. The rest were moved to clean pasture and treated with "di-sulphalac" (sodium sulphathiazole 2·5%, sodium sulphapyridine 2·5%, glucose 5%, 1/6 molar solution sodium lactate q.s., and orthophenylphenol 1:10,000). Twenty died of chronic colitis during the next three months and the rest recovered. Seventy-five store pigs then developed symptoms of the disease; six were treated with swine fever serum [presumably on the assumption that swine fever may have broken out] and four with sulphathalidine without benefit.

Out of 30 unweaned piglets that developed the disease 25 recovered when removed from the sows which were also affected and placed under good sanitary conditions and given suitable feeding, no drugs being given.

Some details are given of the lesions found P.M. in affected animals. C. considered that attempts should be made to differentiate between the various diseases formerly classified as "necrotic enteritis".—C. C. BANNATYNE.

GLADSTONE, G. P. (1950.) **Bacterial antigens and protective vaccines with special reference to anthrax immunity.**—*Lab. J.* **8.** 291-298. 3447

The capsular antigen of *B. anthracis* has no part in immunity, though it is important in virulence. The immunizing antigen has been produced *in vitro*. *B. anthracis* produces in its culture medium a highly potent proteolytic enzyme which destroys the antigen as it is formed. Fortunately, the enzyme is produced late in growth, when the organism is autolysing and forming spores. Serum is a necessary constituent of the medium used for the production of antigen. If dialysed beforehand, no antigen is produced. The concentrated dialysate is also useless. Good antigen yields are obtained from a synthetic medium, to which sodium bicarbonate and electrophoretically homogeneous horse serum albumin are added. The antigen is highly potent.—W. R. BETT.

WRIGHT, G. G. & SLEIN, J. B. (1951.) **Studies on immunity in anthrax. I. Variation in the serum T-agglutinin during anthrax infection in the rabbit.**—*J. exp. Med.* **93.** 99-106. [Authors' summary copied *verbatim*.] 3448

An abrupt decrease in the titer of serum T-agglutinin frequently occurs during the acute phase of anthrax infection in the rabbit. In partially immunized animals which survive the infection the titer returns to normal during convalescence, but has not been observed to rise significantly above the normal level.

The presence of a substance capable of inhibiting T-agglutination may be demonstrated in the sera of many of those animals in which a marked decrease in T-agglutinin has occurred. The polysaccharide and polypeptide antigens of *B. anthracis* do not possess this activity.

Sera containing the T-inhibitory substance usually produce a slow hemolysis of T-erythrocytes and also of normal human type 0 erythrocytes; hemolysis of erythrocytes of other species is irregular. This reactivity of the sera withstands inactivation at 56°C. but is inhibited by citrate.

T-inhibitory and hemolytic activities can frequently be increased by incubation of the acute-phase serum at 37°C.

The ability of normal serum to neutralize the inhibitory and hemolytic activities of acute-phase serum is not significantly increased after recovery from the infection.

The meaning of the results is discussed.

BENDIXEN, H. C. [Undated.] **Bovine tuberculosis.**—*Fight against TB. in Denmark.* pp. 75-90. 3449

B. reviewed briefly the contributions of Danish workers to knowledge of bovine TB. and traced the campaign for its eradication from Denmark up to 1949, when the islands had been

completely free from the disease for two years and Jutland contained 99·5% of herds free from reactors, 99·96% of the herds being tuberculin tested.

Infection of herds by persons suffering from bovine type TB. and the progressive reduction in the price paid for milk from farms which fail to dispose of reactors are features of interest.—E. G. WHITE.

LUDER, W. (1948.) Eindrücke aus Dänemark. I. Die Bekämpfung der Rindertuberkulose. II. Die künstliche Besamung. **[Impressions from Denmark. I. Control of bovine tuberculosis. II. Artificial insemination.]**—*Schweiz. Arch. Tierheilk.* **90.** 604-610. **3450**

During his stay in Denmark L. studied the organization of the control of bovine TB. Control is organized on a voluntary basis, but encouraged by a reduction of the price of milk from an infected herd. Decisions and execution of the control programme are vested in the producers' organizations each consisting of about a hundred herds of 14 cows and supplying the milk to a dairy. This system has worked very well. The country will soon be practically free from bovine TB.

The organization of artificial insemination in Denmark is described.—W. STECK.

JANSEN, J. (1949.) Enkele opmerkingen over de rundertuberculose (in het bijzonder in vergelijking met de bestrijding in andere landen). **[Methods of control of TB. in cattle in countries other than Holland.]**—*Tijdschr. Diergeneesk.* **74.** 768-778. **3451**

An account of methods for the control of TB. in England, France, Switzerland, Belgium, Denmark, Norway and Sweden. In all these countries except England the work is carried out by one organization. Only in France is tuberculin used which is not prepared or controlled by State laboratories. The tests are made intracutaneously, all injections being performed by qualified veterinary surgeons. Only in Norway is the slaughter of reactors obligatory (there were only 16 reacting herds in that country). In Belgium reactors are given distinguishing marks.

The work is done by the practitioners except in Britain.—C. A. VAN DORSSEN.

WANG, V. F. L. (1951.) **The use of the Chinese hamsters (*Cricetulus griseus*) in the study of *Mycobacterium tuberculosis*.**—*Chin. med. J.* **69.** 155-159. [In English. Author's summary modified.] **3452**

Bovine strains of *M. tuberculosis* seem to be more virulent than human type strains for Chinese hamsters. Intratesticular and intraperitoneal injection of *M. tuberculosis* produced earlier and more widespread lesions in the Chinese hamsters than by the subcutaneous route.

Simple bean media may be used as a medium for primary isolation of tubercle bacilli from experimental animals infected with laboratory adapted strains.

MIDDLEBROOK, G. (1950.) **The experimental analysis of virulence of tubercle bacilli.**—*Bull. N.Y. Acad. Med.* **26.** 498-506. **3453**

An investigation of the differences between avirulent and virulent tubercle bacilli showed that although hypersensitivity plays a role in the pathology of TB. it is not involved in the virulence of the tubercle bacilli.

One difference found between virulent and avirulent strains was the characteristic exhibited by the former of growing in a cord-like formation. The component responsible for this was thought to be a lipoidal substance, as the effect was abolished by growth in the presence of Tween 80. Tween 80 only masked the component and did not destroy it as organisms grown in this substance retained their virulence. Virulent strains were stained red by neutral red at alkaline pH whereas non-virulent strains were stained yellow under similar conditions. This reaction is given by several acidic lipoidal substances.—JAMES H. HALE.

GERNEZ-RIEUX, C., SÉVIN, A. & SPY, C. (1948.) Contribution à l'étude de la culture du bacille tuberculeux sur mileu synthétique de Dubos. **[Study of tubercle bacilli in Dubos' medium.]**—*Ann. Inst. Pasteur, Lille.* **1.** 175-199. **3454**

Dubos' medium is useful for obtaining rapid homogeneous cultures, for biological study of the tubercle bacillus, for experimental study of TB. and for study of the action of antibiotics on the bacillus. For diagnostic purposes it is superior to Petragnani egg-medium.

—W. R. BETT.

LUCAS, A., ANDRAL, L., BOULEY, G., PARAF, A. & QUINCHON, C. (1951.) Prophylaxie de la tuberculose bovine. Procédé de lecture de l'intra-dermo-tuberculination seconde. Importance de la tuberculine utilisée. **[The intradermal tuberculin test in cattle and the importance of the type of tuberculin used.]**—*Rec. Méd. vét.* **127.** 222-232. **3455**

Experiments with "Old Tuberculin" on 103 cattle are described in which positive results were based on the appearance of a haemorrhagic or necrotic patch at the site of injection in the caudal fold.—G. V. LAUGIER.

MEYER, S. N., HOUGEN, A. & EDWARDS, P. (1951.) **Experimental error in the determination of tuberculin sensitivity.**—*Publ. Hlth Rep., Wash.* **66.** 561-569. 3456

That experimental errors can frequently cause the Mantoux test to appear to change from negative to positive and *vice versa,* is shown in six studies presented by the Tuberculosis Research Office, WHO, Copenhagen. Small uncontrollable variations in practice always occur in the amount of tuberculin injected, in the depth of injections, and in defining the boundary of the induration.

—W. R. BETT.

MIDDLEBROOK, G. (1950.) **A hemolytic modification of the hemagglutination test for antibodies against tubercle bacillus antigens.**—*J. clin. Invest.* **29.** 1480-1485. [Author's summary copied *verbatim.*] 3457

Human erythrocytes treated with extracts or products of the culture filtrates of tubercle bacilli can be used to detect in homologous human serum antibodies against specific components of tubercle bacilli. A hemolytic modification of the hemagglutination test for antibodies against tubercle bacillus antigens has been described. Comparative studies of the sera of tuberculous patients have shown that the hemagglutination test and its hemolytic modification do not necessarily measure the same serologic properties; this is interpreted as evidence that these tests do not necessarily measure the same antibodies.

ANON. (1948.) **So-called skin tuberculosis of bovines and its relation to the tuberculin test.** pp. 16. figs. 9. London: N.V.M.A. Publication. No. 16. 3458

A brief account of the disease as it is known in Great Britain. Stress is laid on its clinical aspect and on differential diagnosis. So-called skin tuberculosis should not be confused with such incidental nodules as may be caused by fly or tick bites, wound scars or lesions from the inoculation of vaccines or calcium preparations. Two disease entities which could perhaps cause confusion are demodectic mange and the uncommon Roeckl's granuloma.—L. M. MARKSON.

HOEDEMAKER, L. (1950.) Tuberculose en sputumverzamelars. **[TB. and collectors of sputum.]**—*Tijdschr. Diergeneesk.* **75.** 659-662. 3459

A note on the danger to lay collectors of cattle sputum of acquiring TB. in the course of their duties and on the legal responsibilities of their employers with respect to this hazard.

—C. A. VAN DORSSEN.

MEDLAR, E. M., BERNSTEIN, S. & REEVES, F. C. (1951.) **An interpretation of results obtained from cultivation of sputum samples for *M. tuberculosis*.**—*Amer. J. publ. Hlth.* **41.** 292-301. 3460

The authors lay emphasis on the great variation in discharge of tubercle bacilli in sputum. The use of egg-yolk, potato, glycerin, and malachite green suffices for growth requirements. A comparison of five different media tested on 2,157 specimens is presented.

—W. R. BETT.

YOUMANS, A. S. & YOUMANS, G. P. (1948.) **The effect of "tween 80" *in vitro* on the bacteriostatic activity of twenty compounds for *Mycobacterium tuberculosis*.**—*J. Bact.* **56.** 245-252. [Authors' conclusions slightly modified.] 3461

"Tween 80" in a synthetic medium, as compared to the synthetic medium alone, increased the tuberculostatic activity of 15 out of 20 compounds, decreased the activity of 3 compounds, and had no effect on 2 compounds. Crystalline bovine albumin decreased the inhibition of growth of 13 out of the 20 compounds. In the tween-albumin medium, 5 compounds were more bacteriostatic than in the basal medium, 4 gave approximately the same results in two media, and the remaining 11 were less bacteriostatic than in the basal medium. In the presence of purified tween 80, 7 of the 14 compounds were less bacteriostatic than in the presence of unpurified tween 80. The remaining 7 compounds inhibited bacterial growth to approximately the same extent in both media. The bacteriostatic activity of 12 of the 13 compounds was essentially the same in both the purified tween-albumin medium and in the unpurified tween-albumin medium. Decreasing the concentration of tween 80 4-fold in the medium did not alter significantly the bacteriostatic levels of the 5 compounds tested.

Under the conditions of the experiments the free oleic acid that may be present in tween 80 apparently was not responsible for the effect of tween 80 on the bacteriostatic activities.

VAN DEINSE, F. & SENECHAL, F. (1950.) **Freeze-dried (lyophilized) BCG.**—*Tubercle, Lond.* **31.** 157-163. 3462

It had been found by other authors that the best excipient for the freeze-drying of BCG is 50% glucose. A culture pellicle from Sauton medium is crushed into the glucose solution by rust-free steel balls, and the suspension distributed into vials in 0·5 ml. quantities each containing 150 mg. BCG. These are then freeze-dried in a special apparatus. There is

no difference in the number of viable organisms before and after freeze-drying. If kept at 5°C. the number does not diminish for three months and only by 10% after six months. Although the development of a tuberculin reaction takes a little longer in g. pigs vaccinated with freeze-dried BCG, the protective effect of this vaccination is quite comparable to that of vaccination with fresh BCG.—A. MAYR-HARTING.

GERNEZ-RIEUX, C., SÉVIN, A. & VERSCHOOTE, G. (1950.) Sur la durée de survie dans la peau et la diffusion dans l'organisme du B.C.G. administré par scarification chez le cobaye. **[Time of survival of BCG on the skin and in the body of g. pigs after scarification.]**—*Ann. Inst. Pasteur, Lille.* **3.** 103-114. **3463**

BCG remains alive at the inoculation site for at least 40 days, and in the lymph-nodes till the 175th day after inoculation. After 11 days it is found in the spleen.—W. R. BETT.

FISHER, S. (1951.) **Antigenic relationships of erythrocyte adsorbable fractions of some Mycobacteria.**—*Aust. J. exp. Biol. med. Sci.* **29.** 1-8. [Author's summary copied *verbatim.*] **3464**

The presence of common antigenic components between the erythrocyte-adsorbable fractions of the four warm-blooded types of the tubercle bacillus, Johne's bacillus and *Mycobact. phlei* was demonstrated by a haemagglutination and haemolytic technique. One strain of each species was tested.

It was shown by graded adsorption tests that the four types of tubercle bacilli formed a homogeneous group. There was only slight antigenic overlap between the members of this group and *Mycobact. phlei.* Johne's bacillus occupied an intermediate position.

Antibody against cells sensitized with material extracted from tubercle bacilli of the human type was found in the sera of six aborigine lepers, but not in the sera of non-leprous controls. Antibody against the same antigen was also present in the sera of rabbits immunized with *Mycobact. ulcerans.*

TAYLOR, A. W. (1951.) **Varieties of *Mycobacterium johnei* isolated from sheep.**—*J. Path. Bact.* **63.** 333-336. [Author's summary slightly modified.] **3465**

Johne's disease of sheep may be caused by one of three related organisms: *M. johnei* of the classical bovine type; a similar organism isolated from sheep in Iceland; and a highly pigmented organism isolated from sheep in Scotland.

Growth of the Icelandic and pigmented strains, hitherto said to be resistant to artificial cultivation, was described for the first time; both were probably varieties of the classical type.

MORSE, E. V. (1949.) **Criteria for the identification of corynebacteria isolated from animals.**—*Cornell Vet.* **39.** 266-276. **3466**

The morphological and cultural characteristics of 104 strains of *Corynebacterium* are given. Most of the observations agree with the literature published on this subject.—B. WEITZ.

GINSBERG, A. & FITZPATRICK, M. J. (1950.) **Tuberculosis-like lesions in the pig.**—*Vet. Rec.* **62.** 808-811. **3467**

Abscesses resembling tuberculous lesions in pigs, particularly in the submaxillary and prescapular lymph nodes may be caused by corynebacteria, mainly *C. pyogenes.* Apart from tubercle bacilli other bacteria that may be demonstrated in such lesions are haemolytic streptococci, coliform organisms and bipolar organisms.—A. MAYR-HARTING.

WOODROOFE, G. M. (1950.) **Studies on strains of *Corynebacterium equi* isolated from pigs.**—*Aust. J. exp. Biol. med. Sci.* **28.** 399-409. [Abst. from author's summary.] **3468**

The submaxillary lymph nodes from 41 pigs were examined culturally for the presence of *C. equi* and tubercle bacilli. Those of 13 appeared normal on macroscopic examination. Those of the remaining 28 had typical, tuberculous-like lesions. Sixteen strains of *C. equi* were isolated. Tubercle bacilli were not isolated from any of the lymph nodes.

FRIEDLANDER, H., HABERMANN, R. T. & PARR, L. W. (1951.) **Experimental arthritis in albino rats produced by a strain of *Corynebacterium.***—*J. infect. Dis.* **88.** 290-297. [Authors' summary copied *verbatim.*] **3469**

An organism resembling *Corynebacterium kutscheri* has been isolated from a subcutaneous abscess and from throat cultures of white mice and also from the pus in lung abscesses of uninoculated white rats. The cultural characteristics and biochemical reactions of the organism are presented. The experimental intravenous and intraperitoneal infection of white mice with this bacillus produces a disease similar to that described by Kutscher and Condrea. The organism is also pathogenic for white rats when injected intravenously or intraperitoneally. By the former route a disease is produced with polyarthritis as one of the predominant features. The experimental infection of white rats with similar organisms has not been previously described.

STUART, P., BUNTAIN, D. & LANGRIDGE, R. G. (1951.) **Bacteriological examination of secretions from cases of "summer mastitis" and experimental infection of non-lactating bovine udders.**—*Vet. Rec.* 63. 451-453. [Authors' summary copied *verbatim.*] 3470

The results of bacteriological examination of 80 secretions from naturally occurring cases of "summer mastitis" in cattle showed that *C. pyogenes* was usually present in association with one or more of the following organisms: *Str. dysgalactiae,* an anaerobic coccus (probably *Micrococcus indolicus*), and a microaerophilic coccus. A description of the anaerobic coccus and the microaerophilic coccus is given.

Thirty-three of 38 infusions made in non-lactating udders with a mixture of these organisms resulted in acute mastitis indistinguishable from field cases of "summer mastitis"; only four of 20 quarters infused with pure cultures of *C. pyogenes* developed mastitis and it was of a less severe nature.

Vaccination of heifers with formalin-killed cultures gave no protection against experimental infection; vaccination with living cultures gave a partial protection.

ANDERSON, J. P. (1951.) **Outbreak of acute swine erysipelas in a Southland piggery.**—*Aust. vet. J.* 27. 94-95. 3471

An outbreak of acute swine erysipelas is described and some results are claimed for penicillin in the treatment of cases.

—D. C. BLOOD.

I. WELLMANN, G. (1949.) Die gemeine Stechfliege (*Stomoxys calcitrans*) als Überträger des Rotlaufs. [*Stomoxys calcitrans* **as transmitter of** *Erysipelothrix rhusiopathiae* **infection.**—*Zbl. Bakt. I. Orig.* 153. 185-199. [English, French and Russian summaries.] 3472

II. WELLMANN, G. (1949.) Übertragung des Rotlaufs auf Schweine durch den gemeinen Wadenstecher (*Stomoxys calcitrans*) [**Transmission of swine erysipelas by** *Stomoxys calcitrans.*] — *Ibid.* 200-203. [English, French and Russian summaries.] 3473

I. *St. calcitrans* can transmit swine erysipelas by bites from infected to healthy mice. The organisms can be demonstrated in the faeces of the flies for at least 24 hours and in the intestine for 48 hours. Feeding of infected flies to mice leads only exceptionally to infection. Flies fed on the local lesions of percutaneously infected pigs did not transmit the infection.

II. Stable flies fed on defibrinated pigs' blood inoculated with *E. rhusiopathiae,* or on a mixture of this with broth, were infective to young pigs.—A. MAYR-HARTING.

TRAWINSKI, A. (1949.) L'immunisation contre le rouget du porc spécialement avec la culture vaccinale de Staub. [**Staub's swine erysipelas vaccine.**]—*Bull. Off. internat. Epiz.* 32. 13-21. 3474

This is an account of the satisfactory effects of the use of Staub's swine erysipelas vaccine in Poland. The vaccine is avirulent for white mice and swine. Prophylactic inoculation is necessary twice a year as the immunity lasts only 3–4 months.—MALCOLM WOODBINE.

BAKOS, K. (1951.) Ueber Herstellung und Prüfung eines konzentrierten Adsorbatimpfstoffes gegen den Schweinerotlauf. [**Preparation and testing of a concentrated adsorbate vaccine against swine erysipelas.**]—*Nord. Vet.-Med.* 3. 109-126. [In German. English and Swedish summaries. Abst. from English summary.] 3475

B. has prepared concentrated adsorbate vaccines according to the method described by Traub and tested their immunizing effect on white mice and pigs.

The preparation of an effective adsorbate vaccine depends upon the use of immunogenic strains of *Erysipelothrix rhusiopathiae.* As an auxiliary method for the identification of such strains, B. used the haemagglutination test. Out of 90 strains in the collection at the Swedish State Institute of Veterinary Medicine only two had a strong and constant haemagglutinative activity.

The adsorbate vaccines prepared with these two strains proved constantly and highly immunogenic in mouse protection tests. Four pigs vaccinated with one of these vaccines, and four with the other stood up to a test dose of the organism while all the controls became ill with severe local or generalized infection.

B. compared the immunizing effect of the vaccine with that of one prepared from an avirulent strain hitherto employed in Sweden. The adsorbate vaccine proved superior.

LESBOUYRIES, G. (1950.) Pasteurellose du lapin et du lièvre. [**Pasteurellosis in rabbits and hares.**]—*Rec. Méd. vét.* 126. 717-748. 3476

L. gave a detailed account of the various forms of *Pasteurella lepiseptica* infection in rabbits and hares, based on the literature as well as on his own observations on rabbits kept in captivity; the morbidity rate in the latter group was 20%. Methods of prevention and the

relative value of active immunization in the various forms of the disease were discussed.

—G. P. MARSHALL.

GUNNISON, J. B., LARSON, A. & LAZARUS, A. S. (1951.) **Rapid differentiation between *Pasteurella pestis* and *Pasteurella pseudotuberculosis* by action of bacteriophage.**—*J. infect. Dis.* **88.** 254-255. [Authors' summary slightly modified.] 3477

All strains of *Past. pestis* tested (35 virulent and 17 avirulent) were lysed by a critical test dilution of *Past. pestis* phage at 20°C.; none of 45 strains of *Past. pseudotuberculosis* was lysed under these conditions. Hence, the two species can be rapidly and reliably differentiated by the use of *Past. pestis* phage at 20°C.

JACKSON, D. M., LOWBURY, E. J. L. & TOPLEY, E. (1951.) *Pseudomonas pyocyanea* **in burns. Its rôle as a pathogen, and the value of local polymyxin therapy.**—*Lancet.* **261.** 137-147. [Authors' summary copied *verbatim.*] 3478

The local application of 0·1% polymyxin-E cream every other day to burns colonised by *Ps. pyocyanea* in a controlled trial reduced the incidence of this organism significantly. By the 4th day *Ps. pyocyanea* persisted in 26% of 19 polymyxin-treated burns, compared with 81% of 16 control burns. The routine local application of 0·1% polymyxin-E protected burns from colonisation by *Ps. pyocyanea* and some coliform bacilli. 7% of 162 burns treated with polymyxin acquired *Ps. pyocyanea,* compared with 24% of 207 control burns. Local polymyxin E was used for 6 weeks on all burns with no local or general toxic effects. During this period the load of infection in the ward was considerably reduced. No polymyxin-resistant strains of *Ps. pyocyanea* were isolated from burns, and there was no evidence of acquired resistance during the trials. The use of polymyxin in the controlled prophylactic trial was associated with a significant reduction in the healing-time of full-thickness skin-loss burns. 57% of 28 polymyxin-treated patients were healed in 4 weeks, in contrast to 19% of 43 control patients. The average healing-times were 5·2 and 8·5 weeks respectively. There was also a significant increase in the incidence of complete graft takes, and a slight reduction in the incidence of anaemia, pyrexia, and death. These and other data provide evidence that *Ps. pyocyanea* and some coliform bacilli act as pathogens on burns. The case is presented for the routine use of polymyxin combined with penicillin in the local treatment of burns.

CORNETTE, M. (1950.) Septicémie puerpérale de la truie. **[Puerperal septicaemia in sows.]** —*Rec. Méd. vét.* **126.** 31-40. 3479

A general picture of the clinical aspects of porcine parturient septicaemia. The sow is usually affected within 48 hours before or after parturition and death is the usual sequel. Primiparae are rarely affected. The condition is said to be enzootic in some regions, and the incidence is highest in spring and summer, especially in small holdings. Bacterial findings seem to consist mainly of *Bact. coli* and *Aerobacter,* but, in spite of finding a streptococcus only once in three years, C. is of the opinion that the organism usually responsible is a streptococcus, and claims to have used polyvalent antistreptococcal serum with success. Sulphanilamide and penicillin were also used therapeutically.

—J. T. DONE.

SMITH, H. W. & BUXTON, A. (1951.) **Isolation of salmonellae from faeces of domestic animals.**—*Brit. med. J.* June 30th. 1478-1483. [Authors' summary modified.] 3480

In a survey of healthy adult domestic animals and birds in England and Wales, 16 of 650 turkeys, two of 100 geese, six of 500 ducks, four of 600 pigs, five of 750 fowls, three of 750 cows, one of 500 horses, and none of 500 sheep were found to be excreting salmonellae in their faeces. The organisms from the turkeys were *Salmonella typhi-murium* (11), *S. anatum* (4), and *S. tennessee;* from the geese, *S. typhi-murium* and *S. thompson;* from the ducks, *S. typhi-murium* (5) and *S. meleagridis;* from the pigs, *S. meleagridis* (3) and *S. typhi-murium;* from the fowls, *S. typhi-murium* (2), *S. pullorum* (2), and *S. anatum;* from the cows, *S. dublin* (3); from the horse, *S. thompson.*

Among animals with diseases other than primary salmonella infection, eight of 500 fowls, three of 500 cows, two of 500 horses, and none of 130 sheep, 100 goats and 33 pigs were found to be excreting salmonellae in their faeces. Although these figures are higher than those for healthy animals they do not lend much support to the view that salmonellae commonly proliferate in disease processes. The organisms from the diseased fowls were *S. typhi-murium* (4), *S. pullorum* (2), *S. thompson* and *S. senftenberg;* from the diseased cows, *S. dublin* (3); and from the diseased horses, *S. dublin* and *S. thompson.*

The significance of these findings is discussed with regard to the causation and prevention of food-poisoning in man and the control of disease in animals.

MONTEVERDE, J. J. & GARBERS, G. V. (1949.) Infecciones debidas a salmonella abortivo-

equina. Aborto de las yeguas y piosepticemia de potrillos. [*Salmonella abortus-equi* **infection in mares and foals.**]—*Rev. Med. vet., B. Aires.* 31. 138-165. [English and German summaries.] 3481

The authors describe abortion due to infection by *S. abortus-equi* affecting 12 mares out of 42. The authors believe that vaccination is useful after the infection has become fully established.—I. W. Jennings.

Gwatkin, R. & Dzenis, L. (1951.) **Studies in pullorum disease. XXVIII. Artificial infection of turkeys with regular, variant and mixed form cultures of** *Salmonella pullorum.* —*Canad. J. comp. Med.* 15. 108-119. [Abst. from authors' summary.] 3482

In three groups each of 76 day-old poults infected with regular, variant and mixed forms of *S. pullorum,* mortality, agglutinin response and number infected were very similar.

Mortality in the first 24 days was 56·5% in the regular and mixed groups and 63·1% in the variant infection group. *S. pullorum* was recovered from 88·6, 67·4 and 81·2% of the poults in these groups, respectively.

Cultures from the regular and variant infection groups conformed to their own types within a 4% limit. The variant form predominated in the mixed infection group at first but the colony pattern swung to the regular form later. After the acute stage had subsided the ovary and testes were not infected to the same extent as certain other organs.

Agglutination tests with whole blood and tube methods showed a disagreement of 10% on total reactions. *S. pullorum* was isolated from two males which were negative by both methods at the time of killing; both had reacted at earlier tests.

Infection was slight by the time poults began to lay. Some contact birds were infected but all ten survivors eventually recovered from the infection and only six of the surviving 78 of the original birds yielded *S. pullorum* on culture. Most of the turkeys in this experiment recovered, but the infection persisted in a small number. This latter group indicates the necessity for continued testing of turkey flocks and, in view of the increase of reactions during the laying season, this should be done as near that time as possible.

Gwatkin, R. & Dzenis, L. (1951.) **Fowl typhoid. I. Comparison of antigenicity of sixteen gallinarum antigens.**—*Canad. J. Comp. Med.* 15. 15-20. [Authors' summary amended.] 3483

Sixteen strains of *S. gallinarum* were used for the injection of 32 non-reacting rabbits. Some proved to be toxic but finally 29 sera were obtained. Blood was collected 10 days after injection from 20 rabbits and a second injection was given to nine others, which were bled 10 days after the second dose. The titre was increased in only four of the nine rabbits.

In the 464 cross agglutination tests the 1:50 dilution showed complete agglutination in all but 2 tests (with the same antigen which was low with all sera), and in these tests there was a 3+ reading in that dilution. There was no variation between the antigens suggestive of a different antigenic structure.

The 29 sera were also tested with regular and variant pullorum antigens. Under the conditions of this experiment twenty-one gave higher reactions with gallinarum than pullorum antigens, 2 were the same, and 6 were higher with pullorum than gallinarum antigens. Twenty-eight gave higher reactions with regular than variant pullorum antigen and the other serum was the same with both.

In a preliminary check on toxicity of *S. gallinarum* for rabbits, it was found that 0·3 per cent of formalin did not remove the toxicity of suspensions in 2 weeks, nor was it removed by heating, but a formalin-treated sample, heated before injection, did not prove to be lethal.

Boney, W. A., Jr. (1951.) **A study of sulfaquinoxaline and sulfamethazine in fowl typhoid among breeder turkeys.**—*Amer. J. vet. Res.* 12. 134-139. [Part of author's summary copied *verbatim.*] 3484

Sulfamethazine administered as 1:1,000 (0·1%) of the drinking water did not control losses from fowl typhoid in field flocks. When administered intraperitoneally, it reduced the mortality temporarily but, in order to maintain the prophylactic effect, it was necessary to repeat the injections every four or five days.

Three levels of sulfamethazine, 1:5,000 (0·02%), 1:3,000 (0·033%), and 1:1,000 (0·1%) were not toxic and had no effect on water consumption, egg production, fertility, or hatchability of eggs, when given continuously in the drinking water for forty-nine days. The average mortality in the three groups on the three levels was 6·25 per cent as compared to 12·5 per cent in the controls.

Sulfaquinoxaline effectively reduced the mortality in two field outbreaks of fowl typhoid among turkeys when given in the drinking water at the rate of 1:2,500 (0·04%) for two days, and then continued at levels of 1:4,000 (0·025%) in one flock and 1:5,000 (0·02%) in the other flock.

Four levels of sulfaquinoxaline, 1:8,000 (0·0125%), 1:6,000 (0·0166%), 1:4,000 (0·025-%), and 1:2,000 (0·05%), did not adversely affect water consumption, egg production or fertility and hatchability of eggs. No toxicity was observed with any of the concentrations used, and the mortality in the experimental groups for the forty-nine-day period was approximately 1·0 per cent.

Periodic tests revealed that neither sulfaquinoxaline nor sulfamethazine prevented further spread of the disease in the infected flocks. During the period of forty-nine days, one half of the original reactor birds lost their titers completely; others lost it for one or two tests, and then regained it.

Of the original 288 nonreactor hens, 26 became reactors during the experiment, but 6 of them were negative on the last test.

HEMMES, G. D. (1951.) Besmetting met *S. paratyphi B* uitgaande van een varken. [*Salmonella paratyphi B* **infection from pork.**] —*Tijdschr. Diergeneesk.* **76.** 258-261. [English summary.] **3485**

Twenty-four persons and a dog fell ill with gastro-enteritis following ingestion of pork. *S. paratyphi B* was isolated from the faeces of 23 of the patients and of the dog. The same organism was cultured from meat, liver and bone marrow of the slaughtered pig, from a meat pudding and from faeces found in the pigsty. The pig had been ill for three days before slaughter, with fever suspected to be swine erysipelas. The dog excreted salmonella for at least five days.—C. A. VAN DORSSEN.

FOGH, B. (1950.) **Bacterial growth *in vivo* and the action of penicillin upon growth-inhibited bacteria.**—*Acta path. microbiol. scand.* **27.** 889-901. [In English. Abst. from author's summary.] **3486**

Salmonella typhi-murium when injected into white mice behaved like the organisms in a culture multiplying at a slow rate. It is suggested that its reaction to penicillin is also like that of slowly dividing organisms, *i.e.*, it is relatively resistant to penicillin in high concentrations, particularly when it is enclosed in leucocytes.

On the other hand, in the growth conditions *in vivo* lower concentrations, ineffective *in vitro*, might exert a bacteriostatic effect.

ANON. (1951.) **United Nations. Joint FAO/WHO expert panel on brucellosis.** Report of the First Session, Washington. 6-13. Nov. 1950. pp. 36. Rome: F.A.O. Agric. Studies. No. 14. **3487**

Because of the public health significance of brucellosis and the economic loss it causes to the animal industry, the panel recommended that all governments should enact legislation to make brucellosis a notifiable disease in man and animals. The panel believes there is now sufficient knowledge and practical experience to undertake satisfactory programmes of diagnosis, control and eradication in various areas of the world. A summary of this knowledge was formulated and emphasis was laid on the necessity for standardization of the serum agglutination test. An appendix on the ring test and on control of brucellosis in swine was included in the report.—L. M. JONES.

GOLEM, S. B. (1950.) Bruselloz teşhisinde Agglitinasyon reaksiyonunun Standarizasyonu hakkinda. [**Standardization of agglutination reaction for brucellosis.**]—*Türk Ijiyen ve Tecrübî Biyoloji Dergisi.* **10.** 198-219. [French summary.] **3488**

Declares acceptance of the method of preparing standard antigen, method of agglutination and criteria of diagnosis laid down by Stableforth for the Office International des Epizooties. The report gives the results of some comparative tests using locally prepared products and the standard reagents.

—F. C. MINETT.

MCDIARMID, A. (1951.) **The occurrence of agglutinins for *Br. abortus* in the blood of wild deer in the South of England.**—*Vet Rec.* **63.** 469-470. [Author's summary slightly modified.] **3489**

Eighty blood samples from three species of wild deer [*Dama dama, Sika nippon* and *Capreolus capreolus*] in the South of England were examined for *Br. abortus* agglutinins; five reacted at 1:40, four at 1:20, and two at 1:10.

JEPSEN, A. & VINDEKILDE, T. (1951.) **The occurrence and significance of agglutinins in the genital organs of *Brucella*-infected cows.** —*Amer. J. vet. Res.* **12.** 97-99.]Authors' conclusions modified.] **3490**

A local formation of agglutinin may take place in the genital organs of *Brucella*-infected cows. The titers of fluid from the uterine mucosa in several cases were higher than the corresponding blood titers. A technique for collecting fluid for agglutination test from the vagina of the cow was developed and, in two herds, a number of cows were found with negative blood titers but positive uterine titers. Two of these cows later developed positive blood reactions and aborted. After abortion, very high uterine titers developed.

VAN DRIMMELEN, G. C. (1951.) **The brucella ring test for milk of individual cows and its value for determining their status of infection.** —*Onderstepoort J. vet. Sci.* **25.** 39-49. [Abst. from author's summary.] 3491

A technique is described whereby the brucella ring test for milk can be applied to individual cattle and give a useful indication of the real status of infection except in cows vaccinated three to four months previously or recently infected. The test requires little technical skill and the results are available within an hour. The mechanism of the test and its relation to antibody production in the udder are discussed.

KARSTEN. (1950.) Über das Auftreten der Brucellose suis in Deutschen Schweinezuchtbeständen und seine Ursache. [*Brucella suis* **infection in pigs in Germany.**]—*Dtsch. tierärztl. Wschr.* **57.** 85-88, 101-103 & 120-123. 3492

K. described an outbreak of *Br. suis* infection in pigs which occurred enzootically in 1949 in Western Germany, and its successful control by measures other than immunization.

—G. P. MARSHALL.

KAMEL, H. (1949.) **Antigenic relationship between** *Proteus* **and** *Brucella* **in swine.**—*Vet. Med.* **44.** 429-433. 3493

Of 194 pig sera examined, 92% contained agglutinins for *Proteus* OX_{19} in dilutions varying from 1:25 to 1:400. In further tests on 24 pig sera there was some antigenic relationship between *Br. suis* and *Proteus* OX_{19}, but there appeared to be no serological relationship between *Proteus vulgaris O* (isolated from pig faeces) and either *Br. suis* or *Proteus* OX_{19}. Examination of the pig sera revealed no rickettsial bodies which might have accounted for the high *Proteus* OX_{19} titres, and it was concluded that these resulted from subclinical attacks of brucellosis.—I. W. JENNINGS.

HUTCHINGS, L. M., BUNNELL, D. E. & BAY, W. W. (1950.) **Experimental therapy of brucellosis in swine with streptomycin and sulfadiazine.**—*Amer. J. Vet. Res.* **11.** 388-392. 3494

Of 30 pigs experimentally infected with *Br. suis*, 15 were treated with streptomycin and sulphadiazine and 15 were left as untreated controls. Blood culture and serum-agglutination tests indicated that bacteraemia ceased following initiation of treatment although the agglutination response was unaffected. All animals were killed and examined P.M. ten days after cessation of therapy and tissues were examined bacteriologically. *Br. suis* was recovered from tissues of ten of the 15 treated animals in which the circulating blood had been free from brucella. More isolations were made from tissues of untreated animals than from treated ones. Treatment resulted in toxic reactions and weight losses suggesting that the dosages given were at or near the maximum that can be tolerated by pigs.—L. M. JONES.

MEYER, K. F. (1951.) **Epidemiological considerations of animal diseases with special reference to caprine brucellosis.**—*Bol. Ofic. sanit. panamericana.* **30.** 9-15. 3495

Present day knowledge regarding the distribution, symptoms and epidemiology of infection in goats caused by *Br. melitensis* was summarized. The infection rate in exposed human beings was shown to be high. M. recommended control measures combining serological and allergic tests.—C. C. BANNATYNE.

I. EGGERT, E. (1950.) Über eine oral mit Bac. enterotoxicus erzeugte Darmerkrankung beim Hund. [**Experimental intestinal infection in dogs given orally** *Bacillus enterotoxicus* (*Clostridium welchii*) **cultures.**]—*Zbl. Bakt. I. (Orig.)* **156.** 210-213. 3496

II. MARCUSE, K. & EGGERT, E. (1950.) Beitrag zum Nachweis des Bac. enterotoxicus (Zeissler) im Gewebe. [**Demonstration of** *Bacillus enterotoxicus* (**Zeissler**) (*Clostridium welchii*) **in tissues.**]—*Ibid.* 213-215. 3497

I. Records of failure to produce enteritis in dogs by feeding cultures of *Clostridium welchii* are suggested to have been due to the inhibitory effect of acid in the gastric juice. Two dogs, one normal and one affected with the nervous form of distemper, were given the organism in gelatin capsules [details not given]. The normal dog developed no symptoms but *Cl. welchii* was isolated from the faeces two days after administration of the capsule and for a period of four weeks. The dog affected with distemper passed blood-stained fluid faeces within 24 hours and died after 48 hours: *Cl. welchii* was isolated from the faeces during life and from haemorrhagic lesions found in the jejunum at autopsy. Enormous numbers of organisms were present in smears and sections of the jejunum. It is suggested that the canine distemper virus may have been responsible for the acute character of the disease in this dog.

II. The authors agree with the view that *Cl. welchii* Type F plays an important part in the production of necrotic jejunitis in man and have studied the distribution of the organism in infected tissues. Histological study of

biopsy and autopsy material from human cases suggests that the organisms enter from the lumen of the intestine and fill the intestinal crypts. Invasion of the wall is often limited by the muscularis mucosae but in some cases the organisms gain entry to the submucosa and produce necrosis. Penetration of the blood vessels of the intestinal wall was demonstrated: the absence of evidence of bacteraemia suggests that the organisms are unable to survive within the blood vessels owing to the abundance of oxygen. Histological examination has confirmed certain cases in which bacteriological diagnosis could not be carried out and has also shown the absence of lesions in clinically and bacteriologically negative cases. Weigert's fibrin stain was used and there are photomicrographs showing the organisms in the necrotic lesions and within the lumen of blood vessels.
—E. G. WHITE.

DAVIS, J. B., MATTMAN, L. H. & WILEY, M. (1951.) **Clostridium botulinum in a fatal wound infection.**—*J. Amer. med Ass.* **146.** 646-648. [Authors' summary slightly modified.] 3498

A fatal wound infection is reported in which *Clostridium botulinum* type A was isolated. A striking similarity to the clinical course of botulism was noted in the terminal phases of this case. The possibilities of human wound infection with *Cl. botulinum* is discussed, and the difficulties of early diagnosis are emphasized. Recommendation for treatment must await further experience and studies.

STUART, P. (1951.) **An outbreak of bovine mastitis from which yeasts were isolated, and attempts to reproduce the conditions experimentally.**—*Vet. Rec.* **63.** 314. 3499

A yeast of the genus *Candida* was isolated from an outbreak of acute mastitis which occurred following infusion of udders with penicillin.—L. M. JONES.

KIRSCH, E. (1949.) Die Histoplasmose. **[Histoplasmosis.]**—*Z. Tropen. Parasitol.* **1.** 287-300. 3500

57 cases of *H. capsulatum* infection, reported in the literature, are reviewed; 34 of these came from the U.S.A.—W. R. BETT.

KOROLEVA, V. P., NOSKOV, A. I., SYCHKOV, N. V. & DZHILOVYAN, K. A. (1947.) **Epizootic lymphangitis induced by** *Histoplasma farciminosum.*—*Veterinariya, Moscow.* **24.** No. 8. pp. 12-14. 3501

Epizootic lymphangitis was produced in horses by subcutaneous, or intradermal injections of a culture of *Histoplasma farciminosum* or by rubbing it into scarified skin. The incubation period was two months.—F.A.A.

MENGES, R. W. (1951.) **The histoplasmin skin test in animals.**—*J. Amer. vet. med. Ass.* **119.** 69-71. [Abst. from author's summary.] 3502

Details are given of the method of histoplasmin skin testing of the various domestic animals, together with the nature of positive reactions in horses, cattle, sheep and fowls; there are photographs of the reactions. Histoplasmin is the growth product of *Histoplasma capsulatum.*

ECHENIQUE, L. (1950.) Micosis ovina. Presentación. Etiologia. Patogenia. Sintomatología (dermatomicosis-endomicosis). Anatomía Patologica. Diagnóstico. Profilaxis. Bibliografía. **[Mycosis of sheep in Uruguay.]** —*Rev. Med. Vet., Montevideo.* **5.** 987-1007. [English summary.] 3503

E. described a skin infection in lambs and generalized disease in adult sheep, both prevalent in Uruguay, stated to be caused by a species of *Microsporum.* Details were given of the symptomatology and pathology of the conditions and of laboratory investigation. The organism described was pathogenic for laboratory animals and for sheep.—G. P. MARSHALL.

SOLIMAN, K. N. & ROLLINSON, D. H. L. (1951.) **Mycotic infection of the skin of the turkey.**—*Vet. Rec.* **63.** 20-24. 3504

The authors describe a skin disease in turkeys, the cause of which is suggested to have been a streptothrix. The organism resembled that described by Australian workers as the cause of mycotic dermatitis or lumpy wool of sheep.—JAMES H. HALE.

IVERSEN, L. (1950.) Et tilfelle av abort hos storfe forårsaket av aspergillus fumigatus. **[A case of abortion in a cow, caused by** *Aspergillus fumigatus.***]**—*Nord. Vet.-Med.* **2.** 992-996. [English and German summaries. Abst. from English summary.] 3505

Aspergillus fumigatus was demonstrated in the foetus, placenta and uterine exudate of a cow from a herd in which abortion was prevalent.

GORET, P. & JOUBERT, L. (1951.) Sur une nouvelle espèce de *Streptomyces* (*Streptomyces galtieri* n. sp.), isolé d'un cas d'actinomycose septicémique chez le chien. **[***Streptomyces galtieri* **isolated from a case of actinomycosis in a dog.]**—*Ann. Parasit. hum. comp.* **26.** 118-127. 3506

This organism possesses spiral spores, grows on potato, and is pathogenic. It differs from

Actinomyces carneus in several points. The term *Streptomyces galtieri* is suggested.

—W. R. Bett.

Holm, P. (1951.) **Studies on the aetiology of human actinomycosis. II. Do the "other microbes" of actinomycosis possess virulence?** —*Acta path. microbiol. scand.* **28.** 391-406. [In English. Author's summary modified.] 3507

Some penicillin-treated cases of actinomycosis are reported. The treatment was apparently adequate in respect of the ray fungi, inasmuch as these organisms disappeared from the lesions. Nevertheless, the patients remained ill, some of them for several months.

"Other microbes" of actinomycosis were isolated from pus taken from the lesions of these patients. These organisms (*Actinobacillus actinomycetem-comitans,* etc.) thus caused continued diseases in some penicillin-treated actinomycosis patients, in whom the ray fungi were destroyed, and hence appear to have a certain conditional or relative virulence. The reported observations support the hypothesis previously put forward that the "other microbes" of actinomycosis play an active part in the actinomycotic infections.

Peterson, J. E. (1951.) **Leptospirosis of cattle and pigs in Western Australia.**—*Aust. vet. J.* **27.** 40-43. 3508

Histological examination and dark ground illumination of centrifuged urine deposit, and serological examination, revealed the presence of *Leptospira pomona* in material from calves affected with "redwater".

A similar condition was observed in cows and evidence was obtained of *L. pomona* infection in pigs from farms where calves had been infected.—D. C. Blood.

Schermer, J. (1951.) Weitere Untersuchungen über die Leptospirose. **[Leptospirosis in dogs.]**—*Mh. Vet.-med.* **6.** 1-4. 3509

S. reported on a further 47 cases of leptospirosis in dogs diagnosed serologically between Sept. 1949 and Aug. 1950: *L. canicola* 27, *L. icterohaemorrhagiae* 11, *L. grippo-typhosa* 8, *L. sejröe* 1. Four cases classed as *L. canicola* gave an equal titre to *L. icterohaemorrhagiae* and three to *L. grippo-typhosa.* During the same period 27 cases of leptospirosis in man were diagnosed in Göttingen and the distribution of the different types of leptospira was similar to that in the dog, with the addition of one case of infection with *L. batavia.* A plague of wild mice in the autumn of 1949 may have accounted for the infection of *L. grippo-typhosa* and *L. sejroe* in dogs.

The "normal" titre in agglutination-lysis tests in the dog is stated rarely to exceed 1:100; higher titres are considered to indicate infection with the specific organism used as antigen.

Two horses with acute periodic ophthalmia had titres of 1:6,400 to *L. canicola* and 1:800 to *L. grippo-typhosa* respectively.

—E. G. White.

Wolf, J. W., Loman, S. & Wielenga-Bergman, A. B. (1951.) **Leptospira canicola in Indonesia.**—*Doc. Neerl. Ind. Morb. Trop.* **3.** 187-188. [In English.] 3510

The first strain of *L. canicola* has been isolated from a dog in Indonesia.

Wolff, J. W., van Dam, R. & Minkenhof, J. E. (1951.) **The first known fatal case of canicola fever.**—*Lancet.* **260.** 1100-1102. [Authors' summary copied *verbatim.*] 3511

A fatal case of canicola fever is described. The case of death was uraemia due to lower-nephron nephrosis, with terminal bronchopneumonia. There is some evidence from published reports that the renal disease in leptospirosis is nearly always a lower-nephron nephrosis.

Joe, A. & Sangster, G. (1951.) **Canicola fever. Report of three cases of the meningitic type in the human subject.**—*Edinb. med. J.* **58.** 140-147. [Authors' summary copied *verbatim.*] 3512

Three cases of human infection with *L. canicola* are described. In one instance the evidence of canine infection was very strong, in another it was suggestive, and in the third there was no indication of the source of infection.

The clinical picture in each was dominated by the involvement of the meninges, which is the common presenting feature of this variety of leptospiral infection. All patients recovered and no unusual signs or symptoms were observed; there were no ocular or neurological sequelae.

Schlossberger, H. (1950.) Über gerichtete Mutationen bei leptospira. **[Mutations in leptospira.]**—*Z. Hyg. Infektkr.* **131.** 152-156. 3513

Living leptospira of low pathogenicity were incubated with heat-killed strains of high pathogenicity and the mixture inoculated intraperitoneally into g. pigs. In this preliminary report S. claims that the Verdun strain of *L. icterohaemorrhagiae* (almost avirulent), when mixed with a heat-killed fully virulent strain (strain "St.", believed a new leptospira type) isolated from a dog, was converted into the virulent strain "St."—E. G. White.

WIGAND, R. & PETERS, D. (1950.) Neuere Untersuchungen über *Bartonella muris* Mayer. [**Research on** *Bartonella muris*.]—*Z. Tropen. Parasitol.* **2.** 206-220. [Abst. from English summary.] 3514

Observations were made on *Bartonella muris* in 250 white rats, house rats and Norway rats in Hamburg. Bartonella appeared in the blood 1–6 days after splenectomy; they were most frequent between the 3rd and 7th days. After varying periods of latent infection there were relapses in many animals, the organism being present again in the blood for periods of 3–6 days.

By electronic microscopy bartonella could be demonstrated in haemolysed blood as well as by replica technique.

The Weil-Felix reaction was negative in 19 rat sera taken after the infection had run its course. Both organic arsenical compounds and aureomycin were effective against bartonella when given subcutaneously and, in larger dosage, orally.

CECCARELLI, A. & FONTANELLI, E. (1950.) La deviazione del complemento nella diagnosi della agalassia contagiosa delle pecore e delle capre. [**Complement fixation in the diagnosis of contagious agalactia of sheep and goats.**]—*Zooprofilassi.* **5.** 409-418. [English and French summaries.] 3515

This note describes the preparation of antigen and method of making these tests, as used on 1,100 blood samples. The intensity of an infected animal's reaction varied when tests were made daily for several days, but healthy animals in healthy herds always react negatively. The tests are therefore more useful to confirm a group diagnosis than in individual cases.—K. SLAVIN.

CECCARELLI, A. & FONTANELLI, E. (1950.) Sulla varia apparenza delle reazioni immunitarie decelabili con gli esami sierologica-ricerche con il virus della agalassia contagiosa delle pecore e delle capre. [**Serological tests in contagious agalactia of sheep and goats.**]—*Zooprofilassi.* **5.** 489-501. [English and French summaries.] 3516

Complement-fixation tests against the organism of contagious agalactia were carried out on the sera of ten infected and four initially healthy sheep. Complement fixation may be useful in the diagnosis of contagious agalactia on a flock or herd basis, for, although infected animals may eventually yield a positive result if repeatedly tested, only 40–50% may be expected to yield a positive result at the first examination. Specific complement fixation may be obtained as early as three days after experimental and 9–10 days after natural infection, and throughout the illness and convalescence, but the serum becomes negative within three months of clinical recovery. The C.F. titre bears no relationship to the clinical course of the disease. The transient humoral antibody reaction is contrasted with the solid immunity following recovery from infection.—J. T. DONE.

SMITH, G. H. & OPSAHL, J. C. (1951.) **The adrenal-hyaluronidase relationship in infection.**—*Yale J. Biol. Med.* **23.** 361-369. [Authors' summary slightly modified.] 3517

The influence of adrenalectomy and adrenal cortical extracts on the course of infection resulting from the intradermal injection of a hyaluronidase - containing bacterium, *Staphylococcus aureus,* and of a hyaluronidase-free bacterium, *Salmonella aertrycke,* was investigated.

With the hyaluronidase-containing bacteria, the course of infection could be inhibited markedly in normal animals as well as in adrenalectomized animals by the administration of adrenal cortical extracts.

When adrenal cortical extract was mixed with the bacterial suspension and the mixture injected intradermally in mice, the course of infection was inhibited. Under these conditions the amount of adrenal cortical extract necessary for protection was minute when compared with the amount required for protection when administered systemically.

In the case of the hyaluronidase-free bacteria, a protective effect of adrenal cortical extract could be demonstrated only in the adrenalectomized animal. With both types of organism, replacement therapy with adrenal cortical extract in the adrenalectomized animal did not give as complete a protection against infection as was found in the normal control animals.

It was concluded that the adrenal-hyaluronidase relationship may be one of the factors involved in the lowered resistance of adrenalectomized animals to infection, but a lack of hyaluronidase inhibition can be only one component of this complicated deficiency condition.

BERNHEIMER, A. W. & RUFFIER, N. K. (1951.) **Elaboration of desoxyribonuclease by streptococci in the resting state and inhibition of the enzyme by a substance extractable from the cocci.**—*J. exp. Med.* **93.** 399-413. [Authors' summary copied *verbatim.*] 3518

As a preliminary to the study of desoxyribonuclease elaboration by resting cells, 34 strains of streptococci were examined for their

capacity to produce desoxyribonuclease in broth cultures. The largest amounts of enzyme were found to be produced by strains belonging to Lancefield group A and by certain strains belonging to groups C and D. Many strains, especially those belonging to other groups, produced little or no enzyme.

Washed cocci of certain strains elaborated desoxyribonuclease extracellularly upon suspending them in a solution containing an energy source, phosphate and magnesium ions. When any one of these factors was omitted, no enzyme was produced. The appearance of extracellular desoxyribonuclease was found to be inhibited by a variety of enzyme poisons, and this and other findings indicate that desoxyribonuclease is synthesized in the resting cell system.

Cocci were found to contain a substance which partially inhibits the desoxyribonuclease formed by group A strains but which fails to inhibit the desoxyribonuclease formed by strains belonging to groups B and C or to inhibit the desoxyribonuclease derived from yeast, barley, and pancreas.

The inhibitor of group A desoxyribonuclease has been identified as streptococcal ribonucleic acid. Preparations of ribonucleic acid derived from yeast differed from streptococcal ribonucleic acid in failing to inhibit the group A desoxyribonuclease.

BASKETT, A. C. & HINSHELWOOD, C. (1950.) **Oxidation-reduction processes in cultures of bacteria. I. The reducing power of** *Bact. lactis aerogenes*.—*Proc. roy. Soc.* Ser. B. **137.** 524-534. **3519**

Cultures of *Bact. lactis aerogenes* had a reducing power towards oxygen (as measured by a modification of the Thunberg methylene blue test) which is a fairly stable characteristic of the growth under certain specified conditions *e.g.* in glucose-ammonium sulphate medium at stages of growth with pH varying between 7·3 and 6·3. Experiments with a variety of carbon compounds indicated that organisms adapted to growth in a glucose medium required readjustment before they could support growth at the optimum rate or exercise their maximum reducing power in a different medium. Fully adapted cultures had an almost constant reducing power for a wide variety of carbon sources in spite of a nearly fourfold variation of optimal growth rates. It thus appears that the adapted culture has a constant rate of oxygen uptake per unit bacterial nitrogen content and it is suggested that the optimum growth rate of *Bact. lactis aerogenes* which occurs after adaptation to a new source of carbon is fixed by a rate-limiting stop in the respiratory system of the cell. When the cells are first transferred to the new medium the enzyme proportions are unsuitable for optimum utilization of the substrate. Adaptation involves change in enzyme ratios. A limit to the adaptive process is set by the relatively unchanging maximum oxygen uptake.—E. G. WHITE.

KELNER, A. (1950.) **Light-induced recovery of micro-organisms from ultraviolet radiation injury, with special reference to** *Escherichia coli*.—*Bull. N.Y. Acad. Med.* **26.** 189-199. **3520**

The lethal effect of ultra-violet irradiation on *Bact. coli* is reversed on exposure to light especially of a wavelength below 5,100 Å. As the temperature at which cells are maintained during exposure markedly effects the rate of reactivation it is assumed that a thermochemical as well as a photochemical reaction is involved. This reactivation by light is also shown to lower the mutagenic rate induced by ultra-violet irradiation. Lethal doses of ultra-violet irradiation do not immediately kill the cells and they may remain viable for some period in the cold and dark and it is only when metabolism proceeds that death results. Irradiated cell suspensions were placed in nutrient media and it was found that the ability to photoreactivate on exposure to light fell off in an exponential manner. Irradiated cells kept in the cold and in the dark could be reactivated after many hours. It is suggested that the ultra-violet light induced a lethal mutation which can proceed to completion only when the cell is metabolically active. Before fixation of the effect, absorption of reactivating light by a chromophore (whose position in the chain cannot be ascertained) breaks the chain or can even reverse the reaction.—JAMES H. HALE.

SIMMONDS, S. & FRUTON, J. S. (1951.) **The action of penicillin on the growth response of a Gram-negative bacillus to amino acids and peptides.**—*Yale J. Biol. Med.* **23.** 407-426. [Authors' summary copied *verbatim.*] **3521**

The growth of strain SF, a Gram-negative bacillus, to the dipeptide *L*-leucylglycine is characterized by a shorter lag period than that observed with an equivalent mixture of *L*-leucine and glycine, when these test substances serve as the sole carbon and nitrogen sources for the organism. Strain SF can utilize a number of amino acids as the sole sources of carbon and nitrogen, but of those which have been tested, *L*-cystine, *L*-lysine, *L*-arginine, *L*-methionine, and *DL*-threonine were ineffective in promoting bacterial growth.

The growth response to glycine, but not to the other amino acids tested, is inhibited by penicillin. When glycine is supplied in the form of the peptides *L*-leucylglycine, glycyl-*L*-leucine, or glycylglycine, the bacteriostatic action of penicillin is not evident.

Penicillin inhibition of growth in a medium containing glycine is prevented by the addition of *L*-leucylglycine but not by the addition of *L*-leucine, *L*-isoleucine or *L*-serine. Relatively small amounts of glucose, glycerol, or acetate also reverse the bacteriostatic action of penicillin. The bacteriostatic action of the antibiotic can also be altered by changes in the concentrations of the inorganic salts in the basal medium. The bactericidal action of high concentrations of penicillin is more pronounced in media containing glucose and glycine than in media containing glucose and *L*-leucylglycine or *L*-leucine.

Experiments with glycine and with *L*-leucylglycine containing N^{15} in the glycine-nitrogen show that the nitrogen of the free amino acid is used more effectively for protein synthesis than is the nitrogen of peptide glycine only if the cells are grown in the absence of glucose. However, more of the nitrogen of both free and peptide glycine is incorporated into the bacterial proteins in the presence of glucose than in the absence of the carbohydrate.

I. GOTTSCHEWSKI, G. (1950.) Die Genetik der Mikroorganismen. **[Genetics of micro-organisms.]** Proc. 3rd Convention of German Hygienists & Microbiologists. 6th–9th Sept. 1949. Frankfurt.—*Zbl. Bakt. I.* (*Orig.*) **155.** pp. 31-58 of Proceedings. **3522**

II. BOIVIN, A. (1950.) Bakterien-Genetik. **[Genetics of bacteria.]**—*Ibid.* pp. 58-72 of Proceedings. **3523**

I. A comprehensive critical review of the present state of knowledge of bacterial genetics. It covers all kinds of hereditary variations, whether due to gene mutation, chromosome mutation, heterokariosis or other biological processes which may affect the genetic constitution of micro-organisms. The question of induction of mutations, non-specific and specific, is given a very full discussion. Also the problem of the sexuality of bacteria is here discussed in its theoretical and experimental aspects; in this field American authors have recently proved by recombination experiments of bacterial and of phage mutants that the zygote must exist. Some interesting views regarding the analogies between genes and viruses are put forward.

II. This review partly overlaps with, partly complements the preceding one. Particular emphasis is put on nuclear structures and on the function of desoxyribonucleic acid. In this review also the problem of bacterial sexuality is discussed and the experimental facts that support the theory of recombination of genes by fusion are given—A. MAYR-HARTING.

See also absts. **3599-3600** (phage production by bacteria); **3623** (leukergy and pulmonary TB.); **3703** (antibiotic from *Pfeifferella whitmori*); **3719** (removal of bacteria from blood stream of leucopenic rabbits); **3731** (survival of tubercle bacilli in sewage); **3760** (two-needle syringe for tuberculin test); **3766** (report, Cyprus); **3768** (report, Nyasaland Protectorate); **3769** (report, Eire); **3770-3771** (reports, Norway); **3772** (report, Sweden); **3776** (book, chemical activities of bacteria).

DISEASES CAUSED BY PROTOZOAN PARASITES

FORD, J. (1950.) **Early anti-trypanosomiasis measures treated as ecological field experiments.**—*Bull. bibliogr. Bur. interafr. Tsetse.* pp. 234-235. **3524**

During an epidemic in 1910 the human and cattle populations were evacuated from the affected area. Ten years later a herd which was brought in, died of trypanosomiasis. In the first outbreak *G. palpalis* was the vector but in the second, only *G. pallidipes* was present. The preventive measures had allowed this latter species to become an important vector in that region.—JAS. G. O'SULLIVAN.

GIRAUD, P., RANQUE, J. & CABASSU, H. (1950.) Epidémiologie de la leishmaniose viscérale humaine méditerranéenne, en particulier dans ses rapports avec la leishmaniose canine. **[Epidemiology of human and canine leishmaniasis in Marseilles.]**—*Rev. Path. comp.* **50.** 282-299. **3525**

270 cases of human leishmaniasis were diagnosed in the Clinique Médicale Infantile, Marseilles, over a period of 27 years (1922-49). The Marseilles district from which they were derived was considered to be part of an endemic region extending along the south-east coast. The relationships between the incidence of the disease and a number of different factors were assessed. Most cases originated in the suburbs and surrounding countryside and were largely restricted to children aged 1–4 years. A low incidence during 1942-44 was probably due to evacuation of the children and the increased slaughter of stray dogs during that period.

The incidence of *Leishmania* infections among dogs was considerably greater (15–18%) than among the human population. The

geographical distribution followed broadly that of the human disease although in dogs a greater proportion of cases were found in the towns. The infection was often difficult to detect in the early stages, but later characteristic cutaneous and visceral lesions became evident. Treatment with antimonial drugs resulted in the disappearance of symptoms which later reappeared. The formol-gel reaction and gland puncture were considered useful aids to diagnosis. It is suggested that in this case transmission was by ticks rather than by sandflies (*Phlebotomus* sp).—L. P. JOYNER.

SWALES, W. E. (1948.) **Studies on the control of caecal coccidiosis.**—*Off. Rep. 8th World's Poult. Congr., Copenhagen. Vol. I.* pp. 740-745. [Danish and French summaries. Abst. from English summary.] 3526

Sulphamerazine and particularly the sodium salt, was found to be equal or superior to sulphamethazine. The method of flock treatment was described.—JAS. G. O'SULLIVAN.

HORTON SMITH, C. (1948.) **The effects of sulphonamides on coccidiosis of poultry caused by *Eimeria tenella*.**—*Off. Rep. 8th World's Poult. Congr., Copenhagen. Vol. I.* pp. 732-740. [Danish and French summaries. Abst. from English summary.] 3527

Sulphamethazine therapy was described and discussed. The toxicity of the drug was considered and suggestions were made regarding the aims of coccidiosis treatment.

—JAS. G. O'SULLIVAN.

WILSON, J. E. (1951.) **Sulphaquinoxaline and sulphamezathine in the treatment of experimentally induced caecal coccidiosis of chickens (*E. tenella*) and in a natural outbreak of coccidiosis in turkeys (*E. meleagridis* and *E. meleagrimitis*).**—*Vet. Rec.* **63.** 373-377. [Author's summary copied *verbatim*.] 3528

There is little to choose between the therapeutic effect of 0·2 per cent. sulphamezathine sodium and 0·06 per cent. sulphaquinoxaline sodium in the treatment of acute caecal coccidiosis of chicks experimentally induced by the single administration of large numbers of sporulated oocysts of *E. tenella*. Its successful use in a natural outbreak of coccidiosis in turkeys is described. Sulphaquinoxaline sodium is much more palatable than sulphamezathine sodium and is thus to be preferred in the treatment of coccidiosis in turkeys and pheasants. The ingestion of sulphaquinoxaline sodium did not interfere with the production of resistance nor have any adverse effect on growth. The very small quantities required suggest that it might become a more economic form of treatment.

HARWOOD, P. D. & STUNZ, D. I. (1950.) **The efficacy of nitrofurazone fed continuously for control of avian coccidiosis under conditions of natural infection.**—*Proc. helminth. Soc. Wash.* **17.** 103-118. 3529

In young chickens fed nitrofurazone at the rate of 0·0067% in an all mash food there was a 1% mortality from coccidiosis as compared with 15·9% in the controls. In chicks fed nitrofurazone there were fewer deaths and better weight gains compared with those given sulphaquinoxaline.—D. LUKE.

SRINIVASAN, V. R., RAMAMURTHY, V., RAMASWAMY, A. S., RAMA RAO, R. & DE, N. N. (1950.) **Studies in host-parasite relationship in untreated chicks infected with *P. gallinaceum*.**—*Curr. Sci.* **19.** 56-58. 3530

An initial dose of 1–2 million parasites per kg. body weight is the optimum to induce a moderate infection. If no drugs are given the haemoglobin value falls gradually up to the peak of the infection.

Blood iron rises and then falls prior to the appearance of the parasite in the peripheral blood.—S. B. V. RAO.

DUBIN, I. N. & YEN, C. K. (1950.) **Range of extracellular hydrogen ion concentration tolerated by macrophages grown in tissue culture.**—*Arch Path.* **50.** 562-577. [Authors' summary copied *verbatim*.] 3531

A study was made of the range of extracellular hydrogen ion concentration tolerated by macrophages and malarial parasites grown in tissue culture. Cultures of macrophages and parasites were derived from chick embryo spleens infected with exoerythrocytic forms of *Plasmodium gallinaceum*. Optimal growth of macrophages occurred between *p*H 6·8 and 8·2 when cultures were kept at constant *p*H levels for periods of four to six days. Lesser degrees of growth occurred at *p*H 6·6 and 8·4. Growth ceased at *p*H 6·4 and 9·0. The malarial parasites displayed optimal growth from *p*H 7·2 to 8·0. Morphological differences were noted in the macrophages on the acid and alkaline sides of the *p*H spectrum. At *p*H 6·8 the macrophages were large and round and had numerous cytoplasmic vacuoles. At *p*H 8·2 the amount of cytoplasm was considerably reduced and the cell presented an elongated or stellate shape owing to the presence of several pointed cytoplasmic pseudopods. This difference in shape may have resulted from differences in irritability and motility.

ABRAMOV, I. V., TSAPRUN, A. A. & LEBEDEV, E. M. (1950.) **[Single ticks as vectors of *Babesia* infection in horses.]**—*Veterinariya, Moscow.* **27.** No. 3. pp. 12-14. 3532

The possibility of infecting horses with piroplasms from the bites of a single tick were investigated. *Dermacentor marginatus* were collected off a *Babesia* infected horse. Of their next generation, two males and two females were each placed on a healthy horse, one of the females being later transferred to a fifth horse. All five contracted the disease. Attempts to infect healthy ticks failed.—F.A.A.

SCHOENAERS, F. (1951.) Essai sur la répartition de la theilériose bovine et des tiques vectrices, au Ruanda-Urundi, en fonction de l'altitude. **[The distribution of bovine theileriasis and the vector ticks in Ruanda-Urundi and the influence of altitude.]**—*Ann. Soc. belge Méd. trop.* **31.** 371-375. 3533

Theileria parva infection occurs at altitudes up to 2,000 metres (6,000 ft. approx.). Above this altitude *Rhipicephalus appendiculatus, R. capensis, Boophilus bovis* and *Amblyomma variegatum* do not occur, the only tick, and that not very abundant, being *R. kochi*.—M.C.

PIERCY, S. E. (1951.) **The treatment of East Coast fever with (A) phenamidine and (B) "Quinacrine".**—*Vet. Rec.* **63.** 201-203. 3534

Treatment of East Coast Fever with phenamidine (4:4′-diamidino-diphenyl-ether) and quinacrine (mepacrine hydrochloride) is described. Neither drug is beneficial, some information on the toxicity of the former was obtained.—JOHN SEAMER.

PASCAL, R. (1949.) Contribution à l'étude d'un traitement spécifique de l'anaplasmose. **[Treatment of anaplasmosis.]**—*Bull. Soc. Sci. vét. Lyon.* **51.** 115-120. 3535

After unsuccessful treatment with a variety of drugs, 100 ml. "benzoquinoxonal" intravenously, accompanied by 100 ml. *per os* on two successive days, were effective in curing eight cows.—JAS. G. O'SULLIVAN.

SPLITTER, E. J. (1951.) **Eperythrozoonosis in swine.**—*Iowa Vét.* **13.** 77-81. 3536

An account of the incidence, symptoms, P.M. lesions, diagnosis, treatment and control of eperythrozoonosis is given. The condition is differentiated from piglet anaemia, an icteroanaemia of older pigs, and toxic and obstructive jaundice by the examination of fresh uncitrated blood. S. rejects the view of FOOTE *et al.* [see *V.B.* **21.** abstract 2905] on the identity of eperythrozoonosis with "virus anaemia of swine" on the grounds that (a) he was unable to set up the disease in susceptible animals by the inoculation of serum filtrates from animals infected with *E. suis,* (b) he could find no infectious agent in the urine of affected animals, and (c) Avicyl, said to have a beneficial effect on "virus anaemia of swine", failed to alter the course of eperythrozoon infection. Details of the experiments which led to these conclusions are to be published later.—J. T. DONE.

See also absts. **3766** (report, Cyprus); **3768** (report, Nyasaland Protectorate); **3769** (report, Eire); **3771** (report, Norway); **3775** (report, U.S.A.).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

DIJKSTRA, J. M. (1950.) Wat is de rol van smetstofdragers bij het mond- en klauwzeer. **[The role of carriers in foot and mouth disease.]**—*Tijdschr. Diergeneesk.* **75.** 591-597. 3537

After the last epizootic of F. & M. disease in Friesland (2,147 outbreaks) in 1946, new outbreaks caused by carriers (16 outbreaks) were seen only in the first six months.

—C. A. VAN DORSSEN.

MATA, E. G. (1950.) La lucha contra la aftosa en la Argentina. Commentarios sobre la conferencia del Profesor Waldmann. **[Control of foot and mouth disease in Argentina. Comment on a lecture by Prof. Waldmann.]**—*Gac. vet., B. Aires.* **12.** 147-157. 3538

In the Argentine, control of F. & M. disease by slaughter or by total vaccination is considered by M. to be impracticable. He therefore recommends a system of zonal vaccination for the control of the disease. Since cattle in transit are considered to be the greatest source of danger, all animals passing through the "clean zones" should be immunized and their owners should carry "sworn statements" and "vaccination stamps" testifying to the fact that the group of animals under their control has been immunized. Animals destined for immediate slaughter would be exempted. There should be official control of the preparation and use of the vaccines, and bureaucratic complications should be kept to a minimum.—I. W. JENNINGS.

WALDMANN, O. (1950.) La lucha antiaftosa en la Argentina. Respuesta a los comentarios del Doctor Enrique Garcia Mata publicados en

el No. 66 de "Gaceta Veterinaria". **[Control of foot and mouth disease in Argentina. A reply to Dr. E. G. Mata.]**—*Gac. Vet., B. Aires.* 12. 195-197. 3539

Discussing Mata's proposed method of control of F. & M. disease in the Argentine, W. asserts that a policy of total obligatory vaccination is possible, and that with the aid of an informed farming community it will keep the disease under control. Experience in other countries, *e.g.* Germany, shows that Mata's method of zonal vaccination does not achieve control.

W. condemns, and would ban altogether, the practice of sending fat cattle from one auction sale to another (sometimes to as many as ten) for the sole purpose of financial speculation. Such animals eventually arrive at the abattoir, but during their travels may be fertile sources of infection.—I. W. JENNINGS.

GIOLITTI, G. (1950.) Ricerche sull'afta maligna. **[Research on experimental foot and mouth disease in puppies.]**—*Arch. Vet. Ital.* 1. 253-281. [English, French, German and Spanish summaries. Abst. from summaries.] 3540

G. studied the action of F. & M disease virus in puppies, 8–11 days old; all inoculated puppies died within 48 hours of inoculation. Control litter mates did not die. There were lesions in the myocardium, consisting of whitish or yellowish white areas. Bacteriological examination of the heart yielded negative results with one exception and G. stated that the cardiac lesions were caused by the F. & M. disease virus.

Sulphonamide treatment did not affect the development of myocardial lesions or the general course of the disease.—E.G.

BACHRACH, H. L. (1950.) **Optimum conditions for the partial fractionation by ultracentrifugation of guinea pig lymph diseased with foot-and-mouth virus into infectious and complement fixing components.**—*Acta path. microbiol. scand.* 27. 902-906. [In English. Author's summary modified.] 3541

Lymph from g. pigs infected with F. & M. disease virus (g. pig O strain) was resolved by ultracentrifugation into a precipitate containing practically all the virus but possessing only twice the complement fixing activity of the supernatant.

Three samples of lymph were centrifuged at 12,000 r.p.m. for 1·5, 2·5, and 3·5 hours, respectively. During the 1·5 hour period 50% of the virus and 40% of the complement-fixing antigen were precipitated. The corresponding values for the 2·5 hour centrifugation period were 99 and 66% respectively; and for the 3·5 hour period, 98 and 75%. Thus, the maximum resolution of the two components was attained by centrifuging the lymph at 12,000 r.p.m. for 2·5 hours.

The results of this investigation fully substantiate the finding of Traub and Pyl (1943) that the infectious agent of F. & M. disease is not identical with the complement-fixing antigen. In addition, the present work has established the conditions of centrifugation which give the maximum separation of the two components.

SCHMIDT, S. (1950.) Uskadelighed og effektiviet af vaccine mod mund- og klovesyge. **[Safety and efficiency of foot and mouth disease vaccines.]**—*Maanedsskr. Dyrlaeg.* 61. 309-321. [French summary.] 3542

Thirty-one different F. & M. disease vaccines were tested for efficiency and for possible infectiveness for both cattle and g. pigs. Only one, produced from A-virus, was pathogenic for cattle but not for g. pigs and of the others only four, produced from O-virus, were pathogenic for g. pigs. All the vaccines tested produced regularly an effective immunization of cattle, the results for g. pigs being less regular, A-virus vaccine being superior to O-virus vaccines. It was concluded that the O-virus used for vaccine production since 1938, must for reasons unknown have changed its character.

—P. SCHAMBYE.

BASSET, J. (1951.) Vaccins anti-aphteux. Le vaccin de Belin et la commission de contrôle. **[The Belin foot and mouth disease vaccine investigating committee.]**—*Bull. Acad. vét. Fr.* 24. 127-137. 3543

In reply to the criticisms advanced by Belin against the Official Investigating Committee's findings, the author maintains that the Belin vaccine is poor in virus content and of low immunizing power. It is emphasized that full data on the composition of test vaccines should be available to the committee, and a method of control and testing is laid down with a view to the avoidance of criticism.

—G. V. LAUGIER.

CALVÓ FONSECA, R. (1949.) Contribución al estudio de la rabia en Cuba. La enzootia rábica en la Provincia de Pinar del Río durante los años 1942-1948. **[Rabies in Cuba: enzootic in Pinar del Rio, 1942-48.]** —*Rev. Kuba Med. Trop. y. Parasit.* 5. 130-133. 3544

The incidence of rabies is on the increase in the province of Pinar del Río. From 1942–48, 5,209 dogs were immunized and 5,411 stray

dogs were destroyed. In the period 1944–48 the following were the number of dogs detained for observation because of suspected rabies: 130, 148, 167, 160 and 240; of these the numbers that developed rabies were: 3, 3, 10, 8 and 18 respectively. There has been a significant increase in the number of cases of rabies in the province of San Juan y Martinez during recent years: 3 in 1945, 5 in 1946, 7 in 1947, and 15 in 1948. This increase is attributed to the introduction of mongooses (*Mungus birmanicus*) to control rats which were a nuisance in the sugar-cane industry.

The authors suggest that mass immunization of dogs should be undertaken along with the destruction of stray dogs. They also suggest that improved methods of diagnosis are required.

BANG, F. B., LEVY, E. & GEY, G. O. (1951.) **Some observations on host-cell-virus relationships in fowl pox. I. Growth in tissue culture. II. The inclusion produced by the virus on the chick chorio-allantoic membrane.** —*J. Immunol.* **66.** 329-345. [Authors' summary slightly modified.] **3545**

The virus of fowl pox was grown in roller tube cultures of chick fibroblasts in which it survived and multiplied through constant association in low titers with the same continuous cultures for a period of over a hundred days. The cells failed to show any inclusion or destruction. Epithelial cells in culture are killed by the virus, but without the formation of definite inclusion bodies.

The refractile inclusion body of the chick chorio-allantoic membrane is osmophilic and can be partially extracted with ether. The residual inclusion is still resistant to purified desoxyribonuclease, ribonuclease and trypsin. The inclusion can be dissolved and elementary bodies liberated by treatment with sodium lauryl sulphate (Duponal C) but this in the concentrations used inactivates the virus.

The individual elementary bodies as seen in the electron microscope have a central dark area and are brick shaped. This is brought out more clearly by acid peptic digestion. Smear preparations of the whole inclusion show an amorphous material, presumably fat, surrounding the individual bodies. Some inclusions have thin threads of material running through this matrix. Thin sections of infected membranes show an intracellular edema at the start of the infection, then swelling and destruction of the mitochondria. Few virus particles are present at the start. The number of virus particles and the amount of fat increase to form the final dense osmophilic inclusion.

MILLARD, C. K. (1951.) **Does vaccination help to spread smallpox?**—*Lancet.* **260.** 104-107. **3546**

M. suggests that vaccination, although a form of protection for the individual, is a danger to the community. Smallpox in the vaccinated may be so mild as to escape diagnosis which consequently means failure of isolation, resulting in a spread of the disease. Although the same error in diagnosis may occur in the mild case of the unvaccinated, the resulting epidemic has a lower mortality. The reason for this, he suggests, is that the mild case in the vaccinated is really due to a virulent virus which can manifest itself even in the protected individual, whereas the mild case in the unvaccinated is due to a less virulent virus. Further he even maintains that vaccination is providing the mechanism for the selection of virulent virus strains. [It should be pointed out that most of the evidence is from selected outbreaks.]—JAMES H. HALE.

DOWNIE, A. W. (1951.) **Infection and immunity in smallpox.**—*Lancet.* **260.** 419-422. [Author's summary modified.] **3547**

D. suggests that the following account probably shows the course of events. The site of entry of the virus to the tissues is in the upper respiratory tract. At most only a minimal or closed lesion occurs in the mucous membrane and the virus quickly passes to lymph nodes and by the blood-stream to internal organs. Progressive infection of cells in these organs, with increase in virus, takes place during the incubation period. Towards the end of this period, or at the onset of illness, there is an overflow of virus into the blood-stream, and liberation of the products of cell breakdown. The skin and other tissues are infected with virus at this time, and in most cases the immune response with the formation of antibody follows a few days later. The speed and extent of the antibody formation determines the extent of the rash and the severity of the disease. The maturation of the eruption proceeds after the antibody has appeared and is secondary to the destruction of cells infected in the first few days of illness. Patients who die in the later pustular stage of the eruption may have a high titre of antibody in their sera; in such patients death is due to the late effects of earlier virus activity or to some complicating disability or infection. Antibody persists at a high level for some years after smallpox. After vaccination neutralizing antibody may be detectable for many years, but is not usually present in as high a concentration as after smallpox and it varies considerably in different individuals. The quality as

well as the quantity of antibody in the blood may be of importance in determining relative immunity to smallpox infection.

YOUNG, G. A., JR. & UNDERDAHL, N. R. (1949.) **Swine influenza as a possible factor in suckling pig mortalities. I. Seasonal occurrence in adult swine as indicated by hemagglutinin inhibitors in serum. II. Colostral transfer of hemagglutinin inhibitors for swine influenza virus from dam to offspring.**—*Cornell Vet.* **39.** 105-119 & 120-128. [Authors' summary modified.] **3548**

Measurement of relative resistance to swine influenza was made by means of the hemagglutination-inhibition (HI) tests with swine influenza virus.

The HI titers of serum from dams showed significant correlations with the corresponding HI titers of the colostrum of those dams at farrow. Colostrum from dams showing some degree of resistance to swine influenza was capable of inhibiting hemagglutination by Lee (human type B) influenza virus. Colostral HI titers for Lee virus increased as HI titers for swine virus increased.

Tests for HI antibody in the serum of newborn swine previous to sucking indicated that the serum of the newborn pig may be considered lacking in HI antibody. HI antibodies were demonstrable in the serum of newborn pigs within 30 minutes of the time they began to suck. A point was reached at about six hours beyond which further increase in HI titer did not occur readily, although HI antibody was still available in colostrum.

The original concentration of HI antibody in sucking swine was dependent on the amount and concentration of colostrum consumed in the first feeding hours. Loss of HI antibody from the serum of sucking pigs was found to be gradual over an eight-week period. The rate of loss was similar whether the original titer was high or low.

ANON. (1951.) Mens- en varkgriep. **[Human and swine influenza.]**—*S. Afr. med. J.* **25.** 57-58. [In Afrikaans and English.] **3549**

Summarizing Shope's work on the role of lungworms and earthworms in the aetiology of swine influenza, and the association of *Haemophilus influenzae-suis* with the virus in clinical cases of the disease, the editor comments on the lack of evidence as to the inter-epidemic reservoirs of human influenza virus.

The World Health Organization is to undertake a comparative study of human and swine influenza viruses, which, it is hoped, will provide an opportunity to define more clearly the aetiology of the various influenza-like diseases of swine.—J. T. DONE.

DAVENPORT, F. M. & FRANCIS, T., JR. (1951.) **A comparison of the growth curves of adapted and unadapted lines of influenza virus.**—*J. exp. Med.* **93.** 129-137. [Authors' summary copied *verbatim.*] **3550**

A comparison of the growth curves of adapted and unadapted lines of the same strain of Type A or Type B influenza virus in mice has demonstrated that the unadapted lines of virus exhibit a lag phase of growth lasting approximately 12 hours during which little or no multiplication of virus can be demonstrated. Multiplication by the adapted line begins earlier and may be evident as soon as 6 hours after inoculation. Following the lag phase, the rates of multiplication of both lines of virus were indistinguishable when dilute inocula were used. The maximal infectious titer of the unadapted line was lower than that of the adapted line of the same strain and this disparity was increased following inoculation with large doses of virus. The shape and slope of the growth curves of influenza virus in mice were shown to be determined by the line, strain, and concentration of virus used for inoculation. The significance of these findings has been discussed.

WAGNER, R. R. (1951.) **Studies on the inactivation of influenza virus. Comparison of the effects of *p*-benzoquinone and various inorganic oxidizing agents.**—*Yale J. Biol. Med.* **23.** 288-298. [Author's summary copied *verbatim.*] **3551**

In saline solutions of $KMnO_4$, $NaIO_4$, H_2O_2, and quinone, influenza A virus rapidly loses infectivity for chick embryos. With the exception of quinone, which is the most effective inactivator, the relative inactivating capacities of these compounds are correlated with their oxidation potentials. The presence of nonspecific oxidizable material blocks the action of $KMnO_4$ and $NaIO_4$ but not of quinone. Ascorbic acid neutralizes the action of these inactivators when equimolar concentrations are used. Cysteine and glutathione protect against the inactivating effect of quinone but not of $KMnO_4$ and $NaIO_4$. In solutions of $KMnO_4$ there is a marked destruction of the hemagglutinating and antigenic activities of influenza A virus. The effect of $NaIO_4$ is less pronounced, whereas quinone produces relatively little alteration in these properties.

Cysteine, and to a lesser extent, glutathione are capable of restoring a significant portion of the chick embryo infectivity of virus inactivated with minimal effective doses of quinone. Under

the same conditions, virus treated with $KMnO_4$ and $NaIO_4$ regains little of its infectivity.

It seems likely that $KMnO_4$ and $NaIO_4$ are effective inactivators of the PR8 strain of influenza virus by virtue of a nonspecific oxidation. In low concentrations, quinone appears to have a selective affinity for virus constituents that are associated with infectivity. Evidence presented previously and in this report suggests that sulfhydryl groups are essential for influenza virus infectivity.

OVERMAN, J. R. & FRIEDEWALD, W. F. (1949.) **Cold hemagglutination reactions with influenza virus.**—*J. Immunol.* **62.** 415-424. [Authors' summary slightly modified.] **3552**

The following results were obtained in a study of hemagglutination reactions with influenza virus which occur only in the cold. Allantoic fluid suspensions of PR8 or Lee influenza viruses agglutinate sheep and rabbit red cells in high titer at 4°C but not at room temperature or 37°C. The cold hemagglutination is apparently due to the influenza virus particle, as indicated by specific inhibition of the reaction with antiserum and sedimentation of the hemagglutinin by centrifugation at 12,000 r.p.m. for 30 min. Influenza virus heated at 56°C for 30 min. agglutinates sheep cells at room temperature. The receptors of sheep cells can be removed by the action of influenza virus at 37°C, even though agglutination of the cells is not manifest at this temperature. Sodium periodate is also effective in removing the receptors. Human and fowl red cells, which have been treated with influenza virus so as partially to remove the receptors and the cells then stabilized with formalin, also show the cold hemagglutination reaction. Heated influenza virus, however, does not agglutinate the cells at room temperature. The receptors of human red cells involved in the hemagglutination reaction with isoagglutinins or bean extract, and the receptors of sheep cells which react with amboceptor or bean extract, are not affected by treatment of the cells with sodium periodate. Furthermore, Group A or B human red cells, which had been treated with influenza virus to remove the virus receptors, showed no alteration in their capacity to adsorb isoagglutinins.

The implications of these findings were discussed.

SALK, J. E., LAURENT, A. M. & BAILEY, M. L. (1951.) **Direction of research on vaccination against influenza, new studies with immunologic adjuvants.**—*Amer. J. publ. Hlth.* **41.** 669-677. **3553**

The ultimate goal in the study of influenza immunization is the production of an immunizing agent effective against all antigenic varieties, and capable of inducing an effective lasting immunity. To achieve this, a continued search must be maintained for influenza virus strains occurring sporadically in interepidemic periods as well as for strains isolated in well defined outbreaks. Additional work is required before the most effective combination of virus and adjuvant will be devised and tested on a wider scale. Experiments in monkeys are summarized showing the marked enhancement in antibody response to a combination of PR8 vaccine and adjuvant – mineral oil (Bayol F) + emulsifying agent (Arlacel A.); also the striking degree of persistence of the elevated antibody titre.

—W. R. BETT.

KILBOURNE, E. D. & HORSFALL, F. L., JR. (1951.) **Lethal infection with Coxsackie virus of adult mice given cortisone.**—*Proc. Soc. exp. Biol., N.Y.* **77.** 135-138. [Authors' summary copied *verbatim.*] **3554**

Adult mice, ordinarily insusceptible to Coxsackie virus infection, may be lethally infected if preliminarily administered cortisone. Multiplication, serial passage, and specific neutralization of Coxsackie virus in adult mice have been demonstrated. Recovery of Coxsackie virus from a human source has been accomplished in adult mice.

BURNS, K. F. (1951.) **Immunological relationship between the viruses of Japanese B encephalitis and Japanese equine encephalomyelitis.**—*J. infect. Dis.* **88.** 1-8. [Author's summary copied *verbatim.*] **3555**

Continued study of two equine and three human strains of virus isolated from fatal cases included comparison by complement fixation, neutralization and cross resistance tests. These strains show marked similarity of antigenic and immunogenic structure to one another and to Japanese B virus (Nakayama strain). These strains are readily differentiated from the viruses of St. Louis encephalitis and of Eastern and Western equine encephalomyelitis.

EKLUND, C. M., BELL, J. F. & BRENNAN, J. M. (1951.) **Antibody survey following an outbreak of human and equine disease in the Dominican Republic, caused by the eastern strain of equine encephalomyelitis virus.**—*Amer. J. trop. Med.* **31.** 312-328. [Authors' summary slightly modified.] **3556**

Sera collected following an outbreak of human and equine infection in the province of Monte Cristi showed a high incidence of antibodies in human and equine sera, indicating a

high inapparent infection rate. The incidence of antibodies was found to be the highest near the sea coast.

VOGEL, F. S. (1951.) **A lipolytic enzyme in reactive histiocytes of guinea pigs with experimental encephalomyelitis.**—*J. exp. Med.* **93.** 305-311. [Author's summary copied *verbatim.*] **3557**

A lipolytic enzyme has been demonstrated by means of a cytochemical technique and by direct chemical assay in granulomatous tissues of guinea pigs with encephalomyelitis and demyelinization resulting from the injection of an emulsion comprised of brain tissue and adjuvants, including *Mycobacterium butyricum*. Combined histologic and cytochemical studies showed that the lipolytic enzyme was present in the cytoplasm of a large proportion of the reactive histiocytes in the granulomatous tissue around the site of injection in the diseased animals, and that the enzyme-containing histiocytes were even more numerous in the inflamed regional lymph nodes. In control experiments, when emulsions lacking either brain tissue or *M. butyricum* were injected in previously normal guinea pigs, the experimental condition did not develop; under these circumstances the lipolytic enzyme was found in only a small proportion of the cells of the granulomatous tissue around the injection sites, and it was almost negligible in the regional lymph nodes of these animals. It was absent from the cells of the lymph nodes of normal animals, and from the cells of talcum and aluminium hydroxide granulomas produced experimentally in guinea pigs.

The lipolytic enzyme may be a factor in the pathogenesis of experimental encephalomyelitis and demyelinization.

LEMÉTAYER, E. (1949.) Recherches sur l'anémie infectieuse expérimentale des équidés. **[Experimental study of equine infectious anaemia.]**—*Ann. Inst. Pasteur.* **77.** 657-673. **3558**

A summary of the investigations carried out into various aspects of the pathology and epidemiology of equine infectious anaemia. During attacks, the erythrocyte sedimentation rate increases, clot retractility is diminished, the erythrocyte count falls and there is a neutrophile leucocytosis. The blood cholesterol level is raised. There is no change in complement levels. In the absence of a satisfactory diagnostic test, infection of horses provides the most certain method of establishing the presence of the disease. However, the high sedimentation rate, symptoms and haematological findings constitute valuable aids in diagnosis when considered together. In experiments designed to study possible modes of transmission, no virus could be detected in the saliva of affected horses; feeding the virus *per os* failed to infect; intravenous and subcutaneous inoculation of urine from infected horses was also without result. No virus could be detected in sweat. Experiments to study the role of lice and of flies (Tabanidae, *Stomoxys*, and mosquitoes) failed to incriminate any of these. In view however of the ease with which infection can take place through small wounds of the skin and mucous membranes, the role of insect and other vectors could not be regarded as elucidated.—H. PLATT.

WIŚNIEWSKI, T. (1950.) Odczyn histiocytarny przy niedokrwistości zakaźnej koni. **[Histiocytic reaction in equine infectious anaemia.]** —*Ann. Univ. M. Curie-Skłod.* **5.** 151-170. [English summary.] **3559**

The most marked histiocytic reaction took place in kidney tissue, particularly that of the cortex. There was some proliferation of histiocytes in the liver and hypoplasia of capillary endothelium. The spleen was in a state of complete inactivity. The harmful effect of virus on the efficiency of the histiocytes results in extracellular presence of haemosiderin.

—JOHN R. MITCHELL.

GOLEM, S. B. (1945.) Sigir vebasi aşisi ihzarinda tüberkülozlu danalarin âzasindan istifade mümkündür. **[Possibilities of using tuberculous calf organs for preparing rinderpest vaccine.]**—*Türk Veterinerler Cemiyeti Dergisi.* **13.** 22-26. **3560**

Experiments on purely laboratory lines were made in view of a suggestion that cattle need not be certified free from TB. when their organs are to be used for preparation of rinderpest vaccine. For the purpose, cultures of bovine type were thoroughly mixed with tissue mash prepared from liver, etc., such that 1 ml. of the suspension contained 11 mg. culture. One portion to which formalin to 0·2% was added, was left at laboratory temperature for 48 hours and tested on g. pigs. It was concluded that, if tissues from tuberculous animals are to be used for preparing rinderpest vaccine, the percentage of formalin would have to be increased or the suspensions would have to be kept in the antiseptic longer. Since such treatment might affect the antigenic power of the vaccine, tissues for preparing the vaccine should be from tubercle-free animals.—S. ALPAR.

AUDU, J. (1949.) Sur l'emploi du vaccin-virus capripestique dans le Cercle de Segou (Soudan) en 1947-1948. **[The use of goat**

virus rinderpest vaccine in the French Sudan.]—*Bull. Serv. Élev. Industr. anim. A.O.F.* **2.** Nos. 2-3. pp 79-83. 3561

The two forms of vaccine used were virulent goat blood and dried goat spleen. The former was used only in areas round the production centre.

In the 17-month period under consideration 172,984 local zebu cattle were vaccinated. During the first nine months 90 deaths occurred as a result of vaccination. 350 animals died from other causes following vaccination.

While the absence of reaction following vaccination does not necessarily indicate failure to establish immunity, it is advisable to re-vaccinate such animals with vaccine from a different batch.—W. S. MARSHALL.

ANON. (1950.) Renseignements reçus de M. le Dr. R. Daubney, sur l'emploi du virus passé par le lapin. [**Use of the rinderpest rabbit-virus in Egypt.**]—*Bull. Off. internat. Epiz.* **33.** 202. 3562

For successful immunization using rabbit virus a marked reaction must follow the inoculation and each batch of vaccine should be tested in this way.—W. S. MARSHALL.

WATSON, H. G. (1951.) [**Use of the lapinized rinderpest virus in Hong Kong.**]—*Bull. Off. internat. Epiz.* **35.** 208-209. 3563

Of 1,184 animals, re-vaccinated with "lapinized" rinderpest virus, very few had a febrile reaction. Of 272 calves, never vaccinated before, 80% had a marked febrile reaction after inoculation and one died.

—A. MAYR-HARTING.

BROTHERSTON, J. G. (1951.) **The use of lapinised virus vaccine to suppress active rinderpest in susceptible grade cattle.**—*Vet. Rec.* **63.** 235-238. [Author's summary copied *verbatim.*] 3564

Circumstances under which lapinised virus vaccine was used in highly susceptible grade cattle in the presence of active rinderpest are described. In a large milking herd, the vaccine appeared to curtail the course of the disease and to have little adverse effect on the milk yield. In other herds, either infected or with reasonable opportunities for contact, the vaccine established a firm immunity. The immunity established by the vaccine prevented extension of the disease to cattle on remote areas of the farm and to cattle on neighbouring farms.

NAKAMURA, J. (1951.) Etudes récentes au Japon visant surtout la vaccination du bétail japonais contre la peste bovine. I. Sensibilité et résistance des bovidés indigènes au virus de la peste bovine. [**Immunization of Japanese cattle against rinderpest.**]—*Bull. Off. internat. Epiz.* **35.** 195-205. 3565

Korean cattle, which are very susceptible to rinderpest, had been successfully immunized by simultaneous vaccination methods. Japanese cattle, when similarly vaccinated, gave unexpectedly severe reactions. N. could not form a definite opinion on the susceptibility of Japanese cattle to the virus, compared with that of Korean cattle, but Japanese cattle were markedly more sensitive to infection than Holstein cattle. Virus strains attenuated by passage through rabbits or chick embryos were used in immunization tests on Japanese cattle. All these strains were still capable of producing fatal reactions in some animals and are therefore not recommended for immunization of Japanese cattle.—A. MAYR-HARTING.

MCEWEN, A. D., STAMP, J. T. & LITTLEJOHN, A. I. (1951.) **Enzootic abortion in ewes. II. Immunization and infection experiments.** —*Vet. Rec.* **63.** 197-201. 3566

Abortion caused by a virus is widespread among ewes in parts of Scotland and northern England. Two vaccines were prepared, respectively, from infected chick embryos and foetal membranes of an infected ewe. In small-scale vaccination and infection experiments, using up to 11 ewes in each group, with equal controls, considerable resistance to infection in vaccinated animals was demonstrated. The two vaccines were equally effective. On 14 farms in S.E. Scotland 1,184 ewes were vaccinated. Abortion rate in 1,301 controls was significantly higher.—C. C. BANNATYNE.

MANLEY, F. H. (1950.) **The pathological diagnosis of swine fever.** [Correspondence.] *Vet. Rec.* **62.** 177. 3567

Discussing criteria for the diagnosis of swine fever by P.M. examination, M. calls attention to recent work by Helmboldt and Jungherr [*V.B.* **20.** 278] on the histopathology of the C.N.S. as an aid to swine fever diagnosis. In 28 of 31 cases of uncomplicated swine fever they found changes indicative of a non suppurative encephalitis, whereas these changes were not present in the brains of animals which had died of other diseases. They consider these lesions to be a valuable aid in the differential diagnosis of porcine diseases.—J. T. DONE.

DALE, C. N., SCHOENING, H. W., COLE, C. G., HENLEY, R. R. & ZINOBER, M. R. (1951.) **Variations (variants) of hog cholera virus.**—*J. Amer. vet. med. Ass.* **118.** 279-285. [Authors' summary modified.] 3568

Some of the viruses used in the field

possess unusual characteristics; these viruses have been designated variants. The pigs already immunized against hog cholera by serum and virus were resistant to inoculation with the variant virus. However, a number of cholera-susceptible swine, when injected with variant virus and serum, either became sick and recovered or died, whereas similar pigs treated with regular virus and the same serum remained well. Weaned pigs when vaccinated were more susceptible to the effects of variant virus than unweaned pigs. By increasing the dose of serum, the effect of the variant virus could be reduced or eliminated. It is recommended that in hog cholera vaccination careful attention be given to the condition of the herd to be vaccinated, and that the dose of the serum be increased 50 per cent over the minimum dose.

SCHOIJET, A., SEISDEDOS, C. & TAGLE, I. (1949.) Pruebas experimentales para verificar el grado de immunidad que confiere la vacuna cristal violete a base de sangre preparada según la técnica de Penha y D'Apice. **[Immunity tests of crystal violet swine fever vaccine prepared after Penha and D'Apice.]**—*Rev. Fac. Med. vet., Bogotá.* **18.** 173-175. [Abst. from English summary.] 3569

Control tests show that vaccine confers on the pigs sufficient immunity to resist large doses of live virus administered by injection.

The excellent results obtained by the vaccination of 70,000 pigs with the vaccine prepared in accordance with the Penha y d'Apice method [*V.B.* **14.** 88] by the Instituto de Investigaciones Veterinarias seems to confirm that this is the best method to use in uninfected areas.

TESTI, B. (1950.) La maladie de Teschen en Italie. **[Teschen disease in Italy.]**—*Bull. Off. internat. Epiz.* **33.** 575-580. 3570

T. described the history of Teschen disease in Italy, its symptoms and differential diagnosis and the preparation of a vaccine which seems to give good results but has not been sufficiently tested.—K. SLAVIN.

KODRNJA, E. (1950.) Forschungen über die Schweinelähme. **[Porcine encephalomyelitis.]** —*Vet. Arhiv.* **20.** 339-343. [In German: also in French pp. 343-347.] 3571

Porcine encephalomyelitis (Teschen disease) has been recognised in Slovenia since 1940. Since 1946 the disease has been under laboratory investigation and this paper records some of the results up to 1949.

By intracerebral inoculation of virus into 1,566 pigs 95·2% became infected but of 257 pigs injected by the intranasal route only 80% became infected. Pigs fed flesh from infected carcasses developed no symptoms though such pigs proved more refractory to subsequent experimental exposure to the virus than control pigs. Of ten pigs fed infected brains, two contracted the disease. The disease is not very contagious and large quantities of virus inoculated subcutaneously failed to set up the disease.

Brain and spinal cord were pathogenic in dilutions of 1:200 and 1:3,000. Virus was found in the faeces on the 2nd and the 18th day of illness. From dried faeces virus survived for 37 days. Healthy pigs cannot be infected by blood or urine. The virus withstood the effects of 0·5% phenol for 18 weeks. Exposure for 60 min. at 70°C. destroyed the virus. Swine fever antiserum does not afford any protection.

Vaccination with an adsorbate vaccine [preparation details not given] gives a fair degree of resistance to field infection. This vaccine confers a useful resistance lasting eight months. Vaccination has proved of great value in controlling the disease in an infected area.

—D. LUKE.

HORSTMANN, D. M., MANUELIDIS, E. & SPRINZ, H. (1951.) **Neuropathology of Teschen disease (virus encephalomyelitis of swine.).**—*Proc. Soc. exp. Biol., N.Y.* **77.** 8-13. [Authors' summary copied *verbatim.*] 3572

A study of the neuropathology of Teschen disease reveals it to be a diffuse encephalomyelitis with characteristic lesions both as to type and distribution. The lesions are, with minor exceptions, confined to the grey matter of the brain and cord. Their widespread distribution in the CNS, and particularly their striking density in the cerebellum serve to distinguish Teschen disease from poliomyelitis, although spinal cord lesions may be similar in the 2 diseases.

DI DOMIZIO, G. (1950.) Poliomielite intermedio-laterale dei suini. **[Porcine encephalomyelitis [? oedema disease of pigs].]**—*Arch. Vet. Ital.* **1.** 295-323. [English, French, German and Spanish summaries.] 3573

Ten pigs which were believed to have died of Teschen disease were examined. In seven of them there was gelatinous oedema in the rectum, the large intestine and the gastric wall which was about one inch thick. Nearly all the abdominal lymph nodes were enlarged. The lesions in the central nervous system were characterized by degeneration of the dorso-lumbar cord, spreading to the anterior cornua.

In the other three pigs there were inflammatory lesions of the meninges. These lesions decreased gradually towards the spinal cord. The grey matter of the brain, the cranial portion of the spinal cord and the ependyma were also affected.

Five rabbits inoculated intraperitoneally and subcutaneously with spinal cord extracts from the seven pigs developed forms of posterior paralysis. Similar inoculations into cats, rats and mice failed to produce paralysis.

Two rabbits inoculated subcutaneously with filtered spinal cord extract from the three other pigs remained healthy.

D. suggested that the disease in the seven pigs was essentially different from Teschen disease and proposed the name intermediolateral poliomyelitis.

In the other three pigs he diagnosed a nervous form of swine fever.

[The intestinal lesions resemble those of oedema disease of pigs.]—E.G.

HECKE, F. (1951.) Auswertung und praktische Bedeutung von Schutzimpfungen gegen ansteckende Schweinelähmung. **[Immunization against porcine encephalomyelitis.]**—*Wien. Tierärztl. Mschr.* **38.** 147-158. 3574

Two vaccines were used: formolized brain and spinal cord from field cases and adsorbate vaccine prepared with aluminium hydroxide from brain and cord of pigs artificially infected with passaged virus. The basic unit for all epidemiological considerations was the herd. More than 1,000 herds were vaccinated with each of the vaccines, 40,000 non-vaccinated herds serving as controls. Of the latter 3·25% became infected within a given time, and the infection figure for the herds treated with the formolized vaccine was not much lower. Of the herds immunized with the adsorbate vaccine only 0·59% had cases of encephalomyelitis, all of which ocurred within four weeks after vaccination. As the incubation period is 10–25 days, and the immunity after vaccination takes about three weeks to develop fully, cases of illness within four weeks after immunization cannot be regarded as a failure of the vaccination. The protection afforded by vaccination lasts at least eight months, probably longer.

—A. MAYR-HARTING.

LIÉGEOIS, F. & DERIVAUX, J. (1951.) Considérations sur la "maladie des chiens". **[Canine distemper, "hard pad" disease and infectious hepatitis.]**—*Ann. Méd. vét.* **95.** 65-79. 3575

A review article devoted to the acute febrile contagious fevers of dogs (typical distemper; hard pad disease; contagious hepatitis) with particular reference to differential symptomatology, diagnosis and treatment.—H. PLATT.

MARIOTTI, P. & CASAROSA, L. (1950.) Su alcune forme nervose primitive di cimurro del cane. **[Nervous forms of distemper in dogs.]**—*Riv. Med. Vet. Zootec., Parma.* **2.** 277-292. 3576

The authors discussed the symptomatology of the different types of canine distemper and described clinical and histopathological observations on three dogs affected with the nervous type.—M. BERTANI.

PIAT, B. L. (1950.) Maladie de Carré chez deux lionceaux. **[Susceptibility of young lions to dog distemper.]**—*Bull. Serv. Elev. Industr. anim. A.O.F.* **3.** 3577

Two lion cubs, four months old, contracted distemper from a year-old cocker spaniel with which they came in contact. Pulmonary symptoms developed and both had eventually to be destroyed. Transmission of blood to two dogs which had never come in contact with infection caused the development of typical distemper symptoms.—W. S. MARSHALL.

I. MALLET, M. (1949.) 202 vaccinations contre la Maladie de Carré par le Virus adsorbé sur Hydroxyde d'Aluminium et desséché. (Etude critique). **[Distemper immunization with a dried aluminium hydroxide adsorbate vaccine.]**—*Bull. Acad. vét. Fr.* **22.** 240-247. 3578

II. JACOTOT, H. (1949.) Les ultra-virus tissulaires tués en tant que générateurs d'immunité. **[Killed tissue-virus vaccines as immunizing agents.]**—*Ibid.* 215-220, 248-257 & 307-311. 3579

I. A survey of the results in a series of 202 dogs obtained by the use of distemper vaccine produced by the adsorption of the virus on to aluminium hydroxide. Under the conditions of general practice, wherever possible, the dogs were observed until they had reached the age of 18 months. Vaccination before three months of age tended to provide inadequate protection. It was concluded that although instances of distemper occurred which were attributable to the vaccination and also although in some cases the immunity conferred was inadequate, the vaccine was of some value in the prevention of the disease.

II. Tissues of parenchymatous organs containing high concentrations of virus are endowed with definite immunizing properties even after the virus has been effectively killed by chemical agents such as formol.

J. discussed some features of antiviral immunity with reference particularly to methods

of producing it. The use, effects and modes of action of adjuvant substances were discussed in this connexion, and also the degree of immunity produced by killed tissue-virus vaccines and the mechanism involved, which was compared and contrasted with that which follows infection with the living virus.—H. PLATT.

CABASSO, V. J., BURKHART, R. L. & LEAMING, J. D. (1951.) **The use of an egg-adapted modified canine distemper virus vaccine under experimental conditions and in the field.**—*Vet. Med.* **46.** 167-175; & 179. [Authors' conclusions modified.] **3580**

A virulent strain of distemper virus was successfully adapted to grow in the developing chick embryo. After 26 serial passages its virulence for the ferret was lost, but the modified virus still protected this animal against several hundred lethal doses of the parent strain of virus.

Several hundred ferrets injected with a vaccine prepared from the modified avianized virus were proved to be immune to distemper infection upon challenge with fully virulent virus under experimental conditions.

Distemper-susceptible puppies developed substantial titers of neutralizing antibodies following a single injection of avianized virus and showed no visible evidence of disease when challenged with a massive dose of virulent virus.

Good results were obtained with the avianized vaccine on mink treated after distemper had appeared on the premises.

Field immunization of dogs has shown the avianized virus vaccine to be safe upon injection, and that it induces no visible systemic or local reactions. Several of the vaccinated animals were exposed to either clinical distemper cases or in distemper wards without showing any evidence of infection as a result of exposure.

MOMBERG-JØRGENSEN, H. C. (1950.) Hvalpesygestudier. II. Vakcinationseffekten ved forskellig infektionsmodus. **[Studies on distemper. II. The effect of vaccination against infections by different routes.]**—*Nord. Vet.-Med.* **2.** 997-1000. [English and German summaries. Abst. from English summary.] **3581**

Fifty mink, vaccinated with a formolized distemper vaccine, all proved to be immune against a subsequent infection with distemper virus, 25 being inoculated subcutaneously and 25 infected by contact. In 50 controls, 22 out of 25 which were inoculated subcutaneously, and 24 out of 25 which were infected by contact, became ill.

HORSFALL, F. L., JR. & GINSBERG, H. S. (1951.) **The dependence of the pathological lesion upon the multiplication of pneumonia virus of mice (PVM). Kinetic relation between the degree of viral multiplication and the extent of pneumonia.**—*J. exp. Med.* **93.** 139-150. [Authors' summary copied *verbatim.*] **3582**

The rate of multiplication of PVM in the mouse lung is relatively constant, averaging 7·9-fold per day with but slight variations, irrespective of the amount of virus inoculated. Similarly, the rate of increase in the amount of pneumonia is relatively constant, averaging 4·7-fold per day, even though the quantity of virus inoculated is varied over a wide range. It follows that viral multiplication proceeds 1·7 times more rapidly than does extension of the pathological lesion, both reaching limiting maximal values in periods which are predictable from the amount of virus inoculated. From the concentration of virus determined at any time during the incremental period, the amount of pneumonia present earlier or later in the incremental period can be computed with considerable precision. The results support the postulate that the extent of the pathological lesion is dependent upon the degree of viral multiplication.

GINSBERG, H. S. & HORSFALL, F. L., JR. (1951.) **Characteristics of the multiplication cycle of pneumonia virus of mice (PVM).**—*J. exp. Med.* **93.** 151-160. [Authors' summary copied *verbatim.*] **3583**

A study of the multiplication of PVM in the mouse lung yielded evidence in support of the hypothesis that discrete cycles occur. The cycle is characterized by a latent period of about 15 hours, an incremental period of 10 to 15 hours and a total duration of 24 to 30 hours. The yield of virus per cycle is approximately 16-fold.

A large proportion, approximately 90 per cent, of PVM is lost on intranasal inoculation and cannot be recovered from the lung. Of the virus which reaches the lung, almost all becomes non-infective within 12 hours even though a considerable amount retains the capacity to cause hemagglutination. During the incremental period infective virus appears as soon as any increase in hemagglutination is demonstrable.

GINSBERG, H. S. & HORSFALL, F. L., JR. (1951.) **Therapy of infection with pneumonia virus of mice (PVM). Effect of a polysaccharide on the multiplication cycles**

of the virus and on the course of the viral pneumonia.—*J. exp. Med.* 93. 161-171. [Authors' summary copied *verbatim.*] 3584

Inhibition of the multiplication of PVM by the capsular polysaccharide of Friedländer bacillus, type B, is associated with restriction in the development of pneumonia induced with the virus in the mouse lung. The extent of the pneumonic process appears to be a function of the degree of viral multiplication; the greater the inhibition of multiplication, the less extensive is the pneumonia and the more probable is the recovery of animals treated with the polysaccharide. Effective therapy of pneumonia induced in mice with PVM is obtained with a single injection of 0·02 mg. of the substance given intranasally either 2 or 3 days after inoculation. Under appropriate conditions, treated animals recover completely from a viral inection which is, in control animals, uniformly fatal.

The polysaccharide produces inhibition if given in the first two-thirds of the latent period of the multiplication cycle, *i.e.*, with 10 hours, but is ineffective when given at 12 hours or later. However, the second cycle and subsequent cycles are inhibited irrespective of the time the substance is injected during the first cycle of multiplication. The findings are discussed in relation to a theory regarding the mechanism of action of the polysaccharide.

FLEWETT, T. H. & CHALLICE, C. E. (1951.) **The intracellular growth of fowl-plague virus. A phase-contrast and electron microscopical study of the infected tissue cultures.**—*J. gen. Microbiol.* 5. 279-286. [Authors' summary modified.] 3585

The changes in fowl-plague infected tissue cultures were investigated by the phase-contrast and electron microscopes. The nucleolus of infected cells first increased in size and then became granular and highly refractile, finally disintegrating into fragments about 64 hours after infection. After 36–48 hours, when the inclusions were already developed, filaments were found, usually in bundles, possibly having escaped from the nucleus into the cytoplasm; in a few filaments segmentation into spherical bodies and shorter filaments was observed. A possible life cycle is suggested for the virus; first, penetration of the nucleus and growth within it, then extension into the cytoplasm in a filamentous form, and eventual segmentation of some of the filaments into elementary bodies.

DEMNITZ, A. & SCHNEIDER, B. (1950.) Die Differentialdiagnose zwischen der klassischen und atypischen Geflügelpest mit Hilfe der Hämagglutinations-Hemmung. **[Haemagglutination inhibition in the differentiation of fowl plague and Newcastle disease.]**—*Mh. prakt. Tierheilk.* 2. 205-208. 3586

In the search for a rapid method of differentiating between fowl plague and Newcastle disease, specific high titre sera were prepared in 6-week-old chickens with typical strains of the viruses concerned. On applying the haemagglutination-inhibition test, it was found that a 1:5 dilution of the Newcastle disease sera gave a +++ reaction in the presence of fowl plague virus and *vice versa*. A rapid method of distinguishing the two viruses in the field thus seems possible.—J. A. NICHOLSON.

DINTER, Z. & BAKOS, K. (1950.) Über die Beziehungen des Virus N zu dem Virus der klassischen Geflügelpest. **[Relation of virus N to the virus of fowl plague.]**—*Berl. Münch. tierärztl. Wschr.* No. 6. pp. 101-105. 3587

The relationship of virus N to the virus of fowl plague and to that of Newcastle disease was examined by the haemagglutination-inhibition test and by cross-immunization tests. No relationship was found to exist between the N virus and the virus of Newcastle disease. Serological tests revealed some slight antigenic relationship between virus N and one out of two strains of classical fowl plague. Hyperimmunization with virus N gave slight protection against infection with either of the strains of classical fowl plague. Virus N should therefore be regarded as a variant of the virus of classical fowl plague.—A. MAYR-HARTING.

ALEGREN, A. (1951.) La peste aviaire. **[Newcastle disease in Sweden.]**—*Bull. Off. internat. Epiz.* 35. 29. 3588

Fowl pest appeared in Sweden in 1947, and again in 1948 and 1950. By slaughter and destruction of affected flocks the disease was prevented from spreading. The 1947 outbreaks were attributed to the importation of foreign poultry from the Continent of Europe. The source of the 1948 outbreaks was again found to be imported poultry and in addition imported dried eggs. The source of the 1950 outbreak was not traced.—D. LUKE.

BERKE, Z. & GOLEM, S. B. (1949.) Türkiyede Newcastle Hastaligi. **[Newcastle disease in Turkey.]**—*Türk Ijiyen ve Tecrübî biyoloji Dergisi.* 9. 132-149. [French summary.] 3589

A disease of fowls like Newcastle disease (N.D.) first attracted attention in Turkey in 1944. In 1946, Erdöl, Erençin and Durusan reported an outbreak near Ankara of a disease called fowl plague (F.P.) and claimed satisfactory results from a vaccine made from spleen

and brain of affected fowls treated with phenol and glycerin. Berke and Golem now furnish proof for the first time of the existence of N.D. in Turkey. Virus cultures on chick embryos gave lesions characteristic of N.D. For comparison a strain of N.D. virus was obtained from the Pasteur Institute in Paris, and N.D. and F.P. virus strains with their corresponding sera were furnished by Dobson (Weybridge). Tissue suspensions from fowls naturally infected in Turkey as well as virus cultures therefrom produced symptoms and lesions like those produced by N.D. virus of French or English origin. Also, the lesions produced on chick embryos by strains from Turkey are similar to those of authentic N.D. strains and bear no resemblance to those of F.P. Haemagglutination by Turkish viruses is inhibited by N.D. serum but not by F.P. serum. Serum of fowls immunized by Turkish viruses inhibits haemagglutination by English and French N.D. strains but has no action on F.P. virus. It is not known if classical F.P., represented as occurring in Turkey in 1930-33, still exists. A laboratory attendant who tended the fowls affected with N.D. had one week's illness. After recovery, his serum inhibited haemagglutination by N.D. virus, but no antibodies against influenza, brucellosis and F.P. were detectable. —F. C. Minett.

Berke, Z. & Golem, S. B. (1950.) Türkiyede Newcastle hastaligi münasebetile viruslar üzerinde araştirmalar. **[Newcastle disease and related viruses in Turkey.]**—*Türk Ijiyen ve Tecrübî Biyoloji Dergisi.* **10.** 34-68. [French summary.] **3590**

Details of haemagglutination and haemagglutination-inhibition reactions are given, with note of apparatus for reading reactions by reflected light without moving the tubes. Reactions are clearer and more lasting if tubes are stored at 4°C. Newcastle disease and fowl plague viruses treated with 0·1–0·5% formol maintain their haemagglutinating power while with influenza viruses so treated there is some diminution. Amnio-allantoic fluids infected with all three viruses and preserved with 0·1% formalin in the cold, can be used for the reactions for two months. Heat at 56°C. for 30 min. lowers the haemagglutinating power of the three viruses. Heat at 60°C. for 15 min. has no further effect on fowl plague virus but destroys the haemagglutinating power of Newcastle disease virus. Heat at 65°C. for 15 min. destroys the haemagglutinating power of all three viruses. Heat at 56°C. for 30 min. does not elute virus from tissues of fowls dead of Newcastle disease or fowl plague. Such tissue extracts as well as extracts of infected embryos do not often cause haemagglutination or only to low titre, but peptic or tryptic digestion liberates virus, and extracts then become specifically haemagglutinating though still remaining infective. Such specific haemagglutination with extracts from tissues of affected fowls is of value for diagnosis.—F. C. Minett.

Karzon, D. T. & Bang, F. B. (1951.) **The pathogenesis of infection with a virulent (CG 179) and an avirulent (B) strain of Newcastle disease virus in the chicken. I. Comparative rates of viral multiplication. II. Development of antibody.**—*J. exp. Med.* **93.** 267-284; 285-296. [Authors' summaries copied *verbatim.*] **3591**

I. The comparative growth rates of a virulent (CG179) and an avirulent (B) strain of NDV [Newcastle disease virus] in the chicken were analyzed. Following intramuscular inoculation, the CG 179 and B strains both increased at the same rate in the extraneural tissues, *i.e.* the blood, lung, rectum, and spleen, but the CG 179 strain showed an accelerated growth rate in the brain. The CG 179 strain also multiplied more rapidly in the brain than the B strain following intracerebral administration of minimal inocula. Recovery with the B strain was associated with a decline in virus titer, first in the circulating blood, then in the visceral organs, and lastly in the central nervous system. Certain neuropathological observations were correlated with the pattern of virus growth.

II. Circulating antibody appeared in the convalescing NDV-infected chicken concomitantly with the disappearance of virus from the tissues. The antigenic response to the CG 179 and B strains was demonstrated to be approximately equal. The neutralization test in the embryo and the hemagglutination inhibition technique yielded parallel results in the measurement of antibody early in convalescence, but late in convalescence the hemagglutination inhibition titers were relatively lower. This disparity indicates the possible duality of the antibodies. There was a wide ratio between the neutralizing antibody titers found in the brain and in the serum after an asymptomatic infection with NDV. The antibody level in the brain appeared to be related to the extent of virus growth and damage in the central nervous system. It appeared likely that a major factor in determining the virulence of the CG 179 strain was the more rapid attainment in the central nervous system of high virus concentration which outstripped the defense mechanisms of the host.

POTEL, K. (1950.) Zur Histopathologie der Pneumo-Encephalitis (Newcastle-Disease). **[Histopathology of Newcastle disease.]**—*Exp. Vet.-Med.* **1.** 31-44. 3592

The American and European strains of Newcastle disease virus are immunologically identical, but the two forms of the disease differ histopathologically. The American strain is a neurotropic variant of Newcastle disease virus. —E.V.L.

OLESIUK, O. M. (1951.) **Influence of environmental factors on viability of Newcastle disease virus.**—*Amer. J. vet. Res.* **12.** 152-155. [Part of author's summary copied *verbatim.*] 3593

The temperature of storage exerted an important influence on the duration of viability of the virus. The duration of viability tends to decrease at temperatures of 20°C. or higher, with a marked decrease at 37°C.

The virus was viable in fresh eggs for the following periods at the described conditions of storage: incubator, 126 days; normal room, 235 days; hen house, 255 days; refrigerator, 538 days (last test). On down, the virus was viable for the following periods: incubator, 87 days; normal room, 192 days; hen house, 255 days; refrigerator, 538 days; deep freeze, 538 days. The last two periods are not end points in viability but indicate the duration of time covered in this study.

The virus as contained in undiluted amnioallantoic fluid maintained a significant hemagglutination titer for the following storage periods: incubator, one month and twelve days; normal room, twelve months; hen house, fifteen months; refrigerator, eighteen months; deep freeze, eighteen months.

KRANEVELD, F. C. (1950.) **Newcastle disease (pseudovogelpest). The transmission of the Indonesian virus to embryonated chicken eggs.**—*Hemera Zoa.* **57.** 284-286. [In English. French summary.] 3594

K. places on record that attempts to passage the virus in the chick-embryo had been made in the Dutch East Indies, the first successful passage being obtained in 1937 by Nasoetion, A. In 1942 Collier and Dinger published an account of their work in which they had obtained 165 serial passages in duck-embryos [*Geneesk. Tijdschr. Med.-Ind.* **82.** 326].—M.C.

COLLIER, W. A. (1951.) **Inhibition of haemagglutination of Newcastle virus by normal human sera.**—*Doc. Neerl. Ind. Morb. Trop.* **3.** 189-190. [In English. Abst. from author's summary.] 3595

Out of 1,182 Wassermann and Widal sera, 50·3% did not inhibit haemagglutination of fowl blood by Newcastle disease virus in 1:10 dilution; 24·7% inhibited haemagglutination at 1:10, 15·6% at 1:20, 5·8% at 1:40 and 3·6% at 1:80.

Care should be taken in evaluating the results of inhibition of haemagglutination for the diagnosis of infection with Newcastle disease virus in man.

GOLEM, S. B. & BERKE, Z. (1950.) Newcastle Hastaliginda muafiyet tecrübeleri. **[Experiments on immunity in Newcastle disease.]** —*Türk Ijiyen ve Tecrübî Biyoloji Dergisi.* **10.** 173-197. [German summary.] 3596

Report of first trials in Turkey of living Newcastle disease vaccine (Komorov, Palestine strain), obtained by serial passage in duckling brain and embryonating duck eggs. Allanto-amniotic fluid from such eggs gives haemagglutination at 1:640 or over, while blood serum from cockerels ten days after vaccination inhibited haemagglutination at an average dilution of 1:640. Vaccinations were performed on 900 hens involved in an outbreak of Newcastle disease, 1,210 other fowls and over 2,000 hens and pullets in the Hygiene Institute. The only noteworthy drawback is a slight lowering of egg production. In the first case, vaccination was done immediately before the onset of severe cold weather. It is pointed out that in transporting the vaccine the air temperature should not exceed 10°C. and it should be undiluted. After dilution it should be used within a few hours. Vaccination should be reserved for birds in good health, but, if the disease has actually broken out, slightly sick birds may also be vaccinated. It is mentioned that in Israel Komorov has vaccinated more than eight million birds.—F. C. MINETT.

PRIER, J. E. & DART, G. (1951.) **Immunological and serological studies on infectious sinusitis of turkeys.**—*Cornell vet.* **41.** 38-46. [Authors' summary modified.] 3597

Several antigens were made from suspensions of the virus of infectious sinusitis of turkeys. The immunogenic capacity of these preparations was studied by injection in normal turkeys. A whole-embryo, formalin-killed vaccine gave 78 percent protection to challenge doses of virulent virus. Alcohol-precipitated and amphojel-adsorbed vaccines did not give appreciable protection to challenge doses.

No protective antibodies could be demonstrated in plasma of actively infected or recovered turkeys.

Cold hemagglutinins for fowl erythrocytes

were demonstrated in serum samples from infected turkeys. Birds infected with *Salmonella* species and *Erysipelothrix rhusiopathiae* developed similar hemagglutinins.

ROSEN, M. N. & BISCHOFF, A. I. (1949.) **Field trials of sulfamethazine and sulfaquinoxaline in the treatment of quail ulcerative enteritis.**—*Cornell Vet.* **39.** 195-197. [Authors' summary copied *verbatim.*] **3598**

One percent sulfamethazine and 0·25 percent sulfaquinoxaline administered in mash for three days to quail during an epornitic of ulcerative enteritis failed significantly to reduce subsequent severity of the disease either in the individual or in the flock.

LWOFF, A., SIMINOVITCH, L. & KJELDGAARD, N. (1950.) Induction de la production de bacteriophages chez une bactérie lysogène. **[Induction of bacteriophage production in a bacterium.]**—*Ann. Inst. Pasteur.* **79.** 815-859. **3599**

In a lysogenic culture of *B. megatherium* the organisms may be present in a state either "inapt" or "apt" for phage production, depending on whether the medium is purely synthetic or whether a yeast-casein preparation has been added to it. Potentially lysogenic organisms in an apt state can be turned into active phage producers by changes in their metabolism and in particular by ultra-violet irradiation. Every irradiated organism undergoes two divisions before the daughter cells are lysed and thereby liberate the phage. Lysis of apt irradiated organisms can be prevented if they are kept after irradiation in synthetic medium for at least two hours. If the yeast-casein preparation is added before two hours have elapsed the cells are lysed.

—A. MAYR-HARTING.

BOYD, J. S. K. (1950.) **The symbiotic bacteriophages of *Salmonella typhi-murium*.**—*J. Path. Bact.* **62.** 501-517. [Author's summary modified.] **3600**

Lysogenic bacteria or, more precisely, the bacteriophages which live in permanent symbiosis with bacteria, have attracted little attention in recent years. They are nevertheless of considerable importance, partly because in natural surroundings they are probably the origin and continuing source of all bacteriophages, and partly because they present problems whose solution may throw light on allied matters related to less accessible plant and animal viruses.

Approximately 80 per cent. of the strains of *S. typhi-murium* recovered from human infections harbour symbiotic phages.

An account is given of the more important aspects of the relationship of symbiotic phage and host bacterium. This emphasises the many differences between these phages and the better-known lytic types.

Two distinct subgroups of symbiotic phages have been found in *S. typhi-murium*, and within these subgroups eight types have been differentiated.

Strains of *S. typhi-murium* can be "typed" by identifying the symbiotic phage which they harbour. This method is very reliable and may prove in certain circumstances to be a valuable supplement to the accepted method of typing by means of Vi-phages.

BOYD, J. S. K. (1951.) **"Excessive dose" phenomenon in virus infections.** [Correspondence.]—*Nature, Lond.* **167.** 1061-1062. **3601**

B. describes, with explanatory hypotheses, a growth/lysis phenomenon, analogous with the "excessive dose" phenomenon in animal virus infections, encountered during investigations of the interaction of *Salmonella typhi-murium* and its symbiotic bacteriophages.

—CLIVE BRIGGS.

FOGGIE, A. (1951.) **Studies on the infectious agent of tick-borne fever in sheep.**—*J. Path. Bact.* **63.** 1-15. [Author's summary copied *verbatim.*] **3602**

The infective agent of tick-borne fever is similar to certain phases in the morphological cycle of some rickettsias. The type of disease produced and the presence of an arthropod vector also relate it to this group. The name *Rickettsia phagocytophila* is proposed for the tick-borne-fever organism.

Treatment with sulphamezathine cuts short an attack of tick-borne fever but there is a tendency for the condition to recur. The infection is shown to persist in the sheep's body for a variable period—up to two years—following an acute attack of the disease.

Experiments on the nature of the immunity indicate that there are immunological differences in different strains of the tick-borne-fever agent. Attempts to infect animals other than sheep, goats and cattle have been unsuccessful.

SIDKY, M. M. (1950.) **Epidemiology of Q fever.**—*Bull. World Hlth Org.* **2.** 563-579. **3603**

The history of Q fever in Australia, America and the Mediterranean area is reviewed. The role of milk in transmission of disease is particularly discussed. There is a good bibliography.—M.C.

LUOTO, L., HUEBNER, R. J. & STOENNER, H. G. (1951.) **Q fever studies in Southern California. XII. Aureomycin treatment of dairy cattle naturally infected with** *Coxiella burnetii*.—*Publ. Hlth Rep., Wash.* **66.** 199-204. [Authors' summary amended.] **3604**

Thirty-nine of 40 dairy cows selected for two treatment studies on the basis of high serum antibody levels were found to be shedding *Rickettsia burneti* in their milk.

With the dosages of aureomycin used, no apparent decrease in antibodies occurred during or for a 9–11 month observation period following either intramammary or intravenous treatment.

Aureomycin administered by intramammary infusion (100 mgm. twice a day) for 5 days did not result in the clearing of *R. burneti* from the milk of any of 10 treated cows during an 11-day observation period.

The treatment of cows by daily intravenous injection of a total of 15 gm. of aureomycin over a 5-day period failed to eliminate *R. burneti* from the milk of 9 of 10 infected animals within 3 days or from 5 of 7 cows tested 6 months later.

In light of present knowledge, certain practical limitations serve to minimize the possibility of a therapeutic control of Q fever in dairy cattle.

RANSOM, S. E. & HUEBNER, R. J. (1951.) **Studies on the resistance of** *Coxiella burneti* **to physical and chemical agents.**—*Amer. J. Hyg.* **53.** 110-119. [Authors' summary modified.] **3605**

Comparative titrations of yolk-sac suspensions of *Rickettsia burneti* in chick embryos and g. pigs indicated that both provided equivalent and highly sensitive methods for demonstrating small numbers of *R. burneti*. Despite the necessity for several blind subpassages, chick-embryo culture was regarded as the method of choice for demonstrating the presence or absence of *R. burneti* in heavily-infected test suspensions treated with heat or with chemicals.

Although thermal death points as understood in the bacteriological sense were not obtained, Q fever organisms were found to survive temperatures as high as 63°C. when suspended in milk, sealed in vials and submerged for 30–40 min. in water baths. Under similar conditions other rickettsia such as *R. mooseri*, *R. rickettsi* and *R. akari*, apparently did not survive 50°C. for 15 min., thus tending to confirm previous impressions of the high susceptibility of these organisms to heat.

Final concentrations of 0·5% formalin failed to inactivate 1·0% yolk-sac suspensions of *R. burneti* after 96 hours at 4°C. Although 1·0% formalin within 72 hours inactivated a similar suspension, it failed to do so after 24 hours of exposure. In contrast to the comparatively high resistance shown by *R. burneti* other rickettsia appeared to be easily inactivated by 0·1% formalin within 24 hours.

Several experiments indicated that *R. burneti* was resistant to 1·0% phenol for 24 hours, whereas viable *R. mooseri* failed to survive 0·5% for a similar period. Studies of the effects of ether, ultraviolet rays, penicillin and sulfadiazine suggested that *R. burneti* may not differ from other rickettsia in its susceptibility or resistance to these agents.

The comparatively great resistance to heat and to chemicals shown by *R. burneti* was discussed in relation to other attributes which tend to set this organism apart from other rickettsia.

FELIX, A. (1950.) **Standardization of serological tests for the diagnosis of the typhus group of fevers.**—*Bull. World Hlth Org.* **2.** 637-642. [French summary. Author's summary copied *verbatim*.] **3606**

The various advantages and disadvantages of the tests with rickettsial antigens and those with *Proteus* OX antigens are briefly discussed.

Proteus OX antigens cannot be replaced at this stage by rickettsial antigens and, consequently, the average routine laboratory must continue to rely on the agglutination test with *Proteus* OX antigens. It is also shown that it is incorrect to designate the reactions with *Proteus* OX antigens as "non-specific" for typhus and those with rickettsial antigens as "specific".

At present, unsatisfactory techniques are being used by many workers, and evidence is presented that there is a growing awareness that rickettsial complement-fixation and agglutination tests, as well as the Weil-Felix test, require standardization.

The two groups of tests could be standardized by the adoption of "international serum standards". As a first step, it is proposed that international standards should be adopted for the three types of *Proteus* OX antigens, *Proteus* OX19, *Proteus* OX2, and *Proteus* OXK.

SCHUBERT, J. H., STANFORD, S. M. & TIFFANY, E. J. (1951.) **Comparative evaluation of several complement fixation techniques for laboratory diagnosis of the rickettsioses.**—*J. Lab. clin. Med.* **37.** 388-393. [Authors' summary copied *verbatim*.] **3607**

A total of 133 sera classified as positive, suspected, or negative for murine typhus fever

were tested with modifications of the Bengtson, Kolmer, and Rocky Mountain Laboratory complement fixation tests for rickettsial antibodies. A small number of sera giving positive reactions for Rocky Mountain spotted fever and Q fever also were compared. Fifty-four rat sera were studied in addition to the abovementioned human sera. It was found that: The original Bengtson test was the least sensitive. The Rocky Mountain Laboratory test was the most sensitive but the least specific. The rickettsialpox antigen available at this time frequently gave the same as and even slightly higher titers than Rocky Mountain spotted fever antigen when both antigens were tested with Rocky Mountain spotted fever sera.

It appears that of the five modifications of the complement fixation test here investigated, the Bengtson, modified Bengtson, modified Kolmer, or the Hamilton Laboratory test may be used to advantage provided interval specimens from the patient are available for testing.

The modified Kolmer test possesses the advantages of medium specificity and sensitivity and the fact that the essentials of the technique are already in use in many laboratories.

RICKARD, E. R. (1951.) **Murine typhus complement-fixing antibodies in human sera from western peninsular Florida.**—*Amer. J. Hyg.* **53.** 202-206. [Author's summary copied *verbatim.*] **3608**

Complement - fixation tests for murine typhus performed on the sera of 3,678 individuals of the adult population of western peninsular Florida revealed 3·6 per cent positive in the dilution 1 in 8 or greater. The positive percentage was higher in colored persons than in white and higher in males than females.

The lower incidence of positive reactors in higher age groups suggested that following typhus infection certain individuals might lose complement-fixing antibodies with passage of time. That this could occasionally occur was demonstrated by examination of a small series of sera from persons known to have had typhus 2 or 3 years previously.

CORDY, D. R. & GORHAM, J. R. (1951.) **Certain sulfonamides and antibiotics in the treatment of experimental "salmon poisoning" in dogs.**—*J. Amer. vet. med. Ass.* **118.** 305-307. [Authors' summary copied *verbatim.*] **3609**

Sulfonamides, penicillin, aureomycin, and chloromycetin were found to be highly effective in the treatment of experimental salmon poisoning infections in dogs. Dihydrostreptomycin was only 50·0 per cent effective. The agent of the disease appears to have a therapeutic spectrum similar to those of trachoma, inclusion conjunctivitis, and certain members of the psittacosis-lymphogranuloma group.

BAUER, D. J. (1951.) **Nucleic acid metabolism in virus infections.**—*Brit. J. exp. Path.* **32.** 7-13. [Author's summary copied *verbatim.*] **3610**

The activity of various enzymes concerned in nucleic acid metabolism has been investigated in normal mouse brain, and in the brains of mice infected with the viruses of yellow fever, lymphocytic choriomeningitis, vaccinia and dengue.

The activity of certain enzymes is increased in the presence of the virus infection. The effect upon enzyme activity differs from one virus to another, and may perhaps be a characteristic of the virus concerned, and of other viruses related to it.

The identity of the enzymes which are affected gives some information about the metabolic processes which are concerned in the synthesis of new virus material.

The bearing of the results upon recent theories of virus multiplication is discussed.

ACKERMANN, W. W. (1951.) **The role of *l*-methionine in virus propagation.**—*J. exp. Med.* **93.** 337-343. [Author's summary copied *verbatim.*] **3611**

dl-Methoxinine and *dl*-ethionine prevent the propagation of influenza PR8 virus in a medium ordinarily favorable. The inhibitors do not act by destroying the virus, the host tissue, or by preventing the infection of the cells, but by interfering with the synthesis of the virus. The action of the inhibitors can be blocked by *l*-methionine. *l*-Methionine is involved in the biosynthesis of influenza PR8 virus.

See also abstsb. **3477** (bacteriophage); **3681** (condition simulating Borna disease); **3766** (report, Cyprus); **3767** (report, Gold Coast Colony); **3768** (report, Nyasaland Protectorate); **3770-3771** (reports, Norway); **3772** (report, Sweden); **3774-3775** (reports, U.S.A.).

IMMUNITY

BURNET, F. M. [M.D., F.R.S.] & FENNER, F. [M.D.] (1949.) **The production of antibodies. (Monograph of the Walter and Eliza Hall Institute, Melbourne.)** pp. viii + 142. Melbourne, London: Macmillan & Co. Ltd. 2nd Edit. 12s. 6d. **3612**

This is a revision of the first edition published in 1941 and while much of the original

is retained, the authors have deleted, added or rewritten some sections to comply with their interpretation of subsequent developments in this field. In attempting to interpret the phenomenon of antibody formation on biological lines the most appropriate analogy in biology, in their view, would appear to be that of adaptive enzyme formation in bacteria and yeasts. It is frequently found that if an appropriate organism is transferred to a medium containing a sugar that it does not normally ferment, a new capacity will develop to enable it to ferment the new sugar. By analogy it is suggested that foreign organic material is dealt with by the same physiological mechanism as that disposing of effete body cells, but that at some point a modification is necessary and an appropriate adaptive enzyme is produced for the unfamiliar substrate. This is a new self-replicating system ready to function on subsequent stimulation. The respective parts played by the macrophage, lymphocyte and plasma cell are discussed and two possibilities are considered. (1) The antigen is taken up by the reticulo-endothelial cells (macrophages) in which cells the self-replicating immunologically adapted enzyme is established. Rapid production of antibody takes place in the plasma cells which receive the enzyme by multiplication of macrophages to plasma cells or by transfer. (2) The reticulo-endothelial cells may be responsible only for preliminary disintegration of the antigen, the antigenic pattern being then transferred to lymphocytes or plasma cells in which the "enzymic unit" is formed and all subsequent processes occur. The authors' preference is towards the first alternative as it seems to allow more possibility for persistence of the antibody-producing power by having the capacity implanted in the mother cell type from which expendable cells are derived. This envisages involvement of the stem cells of lymph nodes as well as the macrophages. The failure of antibody production against the body's own constituents is met by postulating an ability of the reticulo-endothelial cells to recognize "self" pattern from "not-self" pattern by means of "self-marker" components of the body cells.

The first edition of this book established its importance to the immunologist, an importance which is enhanced by the present edition, through the comprehensive way in which the authors discuss the problem of antibody production and provide a theoretical approach to its understanding.—W. M. Henderson.

Anon. (1948.) **Radioactive antibodies.**—*J. Amer. med. Ass.* **138.** 133. **3613**

Various chemical agents have been coupled to antibodies without destroying their specificity —dyes, fluorescing substances and uranium. In 1948, workers at the California Institute of Technology prepared an anti-kidney serum (made by injecting rabbits with rat kidney) which precipitated extracts of rat kidney in titres as high as 1:2048. The serum was treated with radio-active iodine (I^{131}) and the iodinated globulin was precipitated. Rats injected intravenously with such globulin had a very high concentration of radio-active material in the blood-free kidneys when killed two days later: there was little radio-activity elsewhere. In control rats injected with iodinated anti-ovalbumin or iodinated normal serum globulin there was almost no radio-activity in any of the fixed organs, including the kidneys. Since precipitating sera can be prepared against certain tumours it would be of interest to see whether conjugation of such a serum with radio-active iodine would lead to its selective localization in tumour tissue and thus exert a therapeutic effect. —E. G. White.

Bjørneboe, M., Fischel, E. E. & Stoerk, H. C. (1951.) **The effect of cortisone and adrenocorticotrophic hormone on the concentration of circulating antibody.**—*J. exp. Med.* **93.** 37-48. [Authors' summary copied *verbatim.*] **3614**

The administration of adrenocorticotrophic hormone and of cortisone was found to result in a reduction in the concentration of anti-pneumococcal antibody in the circulation of rabbits. This reduction occurred both when the hormones were administered at the beginning of immunization and after immunization was well advanced. Marked atrophic changes in lymphoid tissue and a diminution in the number of various types of mononuclear cells followed upon the hormone aministration. The possible bearing of these observations on theories concerning the sites of antibody production is discussed.

Barr, M. & Glenny, A. T. (1950.) **The relation between antitoxic responses to prophylactic injections of different antigens.**—*Brit. J. exp. Path.* **31.** 779-783. [Authors' summary modified.] **3615**

Many hundred horses received two injections of diphtheria, tetanus, *Clostridium oedematiens* and *Cl. septicum* prophylactics. Antitoxin titrations were made upon samples of serum withdrawn 14 days after the second injection, given 4 weeks after the first. Evidence is given showing some correlation between the titres of the different antitoxins.

A few horses were found to be very refractory to immunization, and the case of one horse is recorded which, after receiving 5 monthly injections of tetanus, *Cl. oedematiens* and *Cl. septicum* prophylactics, failed to produce 1 unit of any of the corresponding antitoxins. Of 650 horses given two doses, only 5·8 per cent failed to produce this amount of tetanus antitoxin.

Horses naturally immune to diphtheria appeared to respond slightly better to injections of the three other prophylactics than horses with no such natural immunity.

ARROYO MARTÍN, C. (1949.) Contribución al estudio del hemograma y de las variaciones hemométricas en los bovinos durante el proceso de premunición. **[The blood picture of cattle undergoing premunization.]**—*Rev. grancolomb. Zootec. Hig. Med. vet.* **3.** 839-914. **3616**

This is an account of investigations into the blood pictures of Swiss cattle imported into Venezuela, and held for acclimatization and premunization against babesia and anaplasma.

The premunization involves such a marked drop in the red cell count that it is essential to import only animals with a high initial red cell count or with a high haemoglobin value. In the white cell investigations, total white cell counts were not made, owing to their natural variability, but detailed leucocytic formulae are given of 61 cattle undergoing premunization. It appears that there is an initial lymphocytosis during the course of injections and budding lymphocytes are often seen. There is a constant shift to the left.

—I. W. JENNINGS.

STETSON, C. A. & GOOD, R. A. (1951.) **Studies on the mechanism of the Shwartzman phenomenon. Evidence for the participation of polymorphonuclear leucocytes in the phenomenon.**—*J. exp. Med.* **93.** 49-63. [Authors' summary copied *verbatim.*] **3617**

The inhibition of the Shwartzman phenomenon by nitrogen mustard and benzene has been confirmed and investigated further. This inhibition can be correlated with the leucopenia induced by these agents. Evidence is presented indicating that polymorphonuclear leucocytes play an essential role in the preparation of the skin for the Shwartzman phenomenon.

STETSON, C. A., JR. (1951.) **Studies on the mechanism of the Shwartzman phenomenon. Certain factors involved in the production of the local hemorrhagic necrosis.**—*J. exp. Med.* **93.** 489-504. [Author's conclusions copied *verbatim.*] **3618**

Evidence is presented to indicate that a profound thrombocytopenia and granulocytopenia occur during the second stage of the Shwartzman phenomenon, prior to the actual onset of hemorrhage in the prepared skin areas. These hematologic alterations appear to be due to accumulation of the cells mentioned in the capillary bed of the lungs and perhaps other internal organs. This seems to be consequent on certain changes in the platelets and polymorphonuclear leucocytes, which result in the formation of clumps of these elements.

In skin areas prepared for the Shwartzman phenomenon, the capillaries and small veins become occluded by masses of platelets and granulocytes after the intravenous challenging injection has been given. Following the interruption of blood supply necrosis of the involved vessels takes place, and hemorrhage occurs later where the vessel walls have lost their integrity.

STOLLERMAN, G. H., BERNHEIMER, A. W. & MACLEOD, C. M. (1950.) **The association of lipoproteins with the inhibition of streptolysin S by serum.**—*J. clin. Invest.* **29.** 1636-1645. [Authors' summary copied *verbatim.*] **3619**

The inhibition of streptolysin S is due to normal components of serum rather than to a specific antibody. The sera of a wide variety of normal animal species inhibit streptolysin S and this inhibition is independent of gamma globulins in the sera of humans, rabbits and horses. Specific antibodies to streptolysin S did not appear when rabbits were injected with streptolysin S or with live cultures of beta hemolytic streptococci.

The highest degree of streptolysin S inhibition appears in the fractions associated with alpha-1 and beta-1 lipoproteins when serum is fractionated by the cold alcohol method. When serum is fractionated by salting out with ammonium sulfate, the albumin fraction is also associated with streptolysin S inhibition. Saline suspensions of phospholipids, particularly lecithin, inhibit streptolysin S.

A marked reduction of streptolysin S inhibition occurs when serum is treated with *Cl. welchii* lecithinase or with ether or ether-alcohol mixture.

Inhibition of streptolysin S by serum is increased by tryptic digestion, by heating near the coagulation point, by prolonged storage at or above 4°C and by fractionation with ammonium sulfate. Following fractionation with

ammonium surfate, the increase in total inhibitory activity of horse serum was 3·75 times, and of human serum 2·41 times. In each instance, treatment with lecithinase or with ether produced a marked decrease in steptolysin S inhibition.

The streptolysin S inhibitor in serum appears to be composed of a phospholipoprotein complex and the phospholipids of serum may well play a role in its stabilization as well as in its composition.

BOYDEN, S. V. (1951.) **The adsorption of proteins on erythrocytes treated with tannic acid and subsequent hemagglutination by antiprotein sera.**—*J. exp. Med.* 93. 107-120. [Author's summary copied *verbatim.*] 3620

Treatment of sheep erythrocytes with suitable concentrations of tannic acid renders them capable of adsorbing certain protein molecules from solution in saline. Red cells which have adsorbed proteins in this way are agglutinated after washing by the homologous antiprotein sera, even by high dilutions.

Through hemagglutination, sera can be titrated for antibodies against antigens adsorbed on the cells exposed to tannic acid. Furthermore, small amounts of the antigens can be detected through their power to inhibit hemagglutination of the treated cells.

ANDERSON, H. C. & MCCARTY, M. (1951.) **The occurrence in the rabbit of an acute phase protein analogous to human C-reactive protein.**—*J. exp. Med.* 93. 25-36. [Authors' summary copied *verbatim.*] 3621

The occurrence in the rabbit of an acute phase protein analogous to human C-reactive protein has been confirmed. The acute phase protein of the rabbit reacts with a special form of the pneumococcal somatic polysaccharide, designated Cx polysaccharide, in the same manner that the human C-reactive protein reacts with the classical C polysaccharide. The method of preparation and some of the properties of the Cx polysaccharide are described.

The rabbit Cx-reactive protein has been shown to be remarkably similar to human C-reactive protein in its general properties and in the conditions which govern its appearance in the blood. It has been obtained in crystalline form, and appears to be antigenically distinct from the proteins of normal rabbit serum.

FLECK, L. & SZCZYGIELSKA, J. (1951.) Immunologiczne znaczenie leukergii. [**The immunological significance of leukergy. (Increased adhesiveness and tendency to clumping of leucocytes.)**]—*Ann. Univ. M. Curie Skłod.* Sect. D. 5. 507-521. [English and Russian summaries. Abst. from English summary.] 3622

The authors use the word leukergy to indicate the increased adhesiveness and tendency to agglomeration of leucocytes after inflammatory stimuli which leads to their adhesion to the walls of capillaries preparatory to diapedesis.

They studied this phenomenon *in vitro* using blood from rabbits which had been injected intravenously with killed *Bacterium coli.* They conclude that leukergic leucocytes are much more motile than normal.—M.C.

BORECKA, D. (1951.) Tuberkulinowa prowokacja leukergii jako próba na czynną gruźlicę płuc. [**Tuberculin provocation of leukergy as a test for active pulmonary tuberculosis.**]—*Ann. Univ. M. Curie Skłod.* Sect. D. 5. 469-486. [English and Russian summaries. Abst. from English summary.] 3623

B. found that g. pigs and rabbits recently infected with bovine type TB. develop a well marked increase in leukergy following each intradermal injection of 0·2 ml. tuberculin (O.T.).

In rabbits infected with human type tubercle bacilli and having only a local encapsulated lesion, the increase in leukergy following injection of tuberculin occurred only during the first few weeks after the infection. The same findings applied to rabbits infected with BCG.

The possible use of the test to distinguish active TB. from inactive is suggested.—M.C.

BORKOWSKA, S. (1951.) Wystepowanie leukergii w stanach anafilaktycznych. [**Leukergy in anaphylactic states.**]—*Ann. Univ. M. Curie Skłod.* Sect. D. 5. 387-405. [English and Russian summaries. Abst. from English summary.] 3624

Leukergy is increased following the second and subsequent injections of a foreign protein. —M.C.

See also abstr. 3447-3448 (anthrax); 3457 (TB.); 3462-3463 (BCG); 3464 (antigenic relationship of mycobacteria); 3474-3475 (swine erysipelas vaccines); 3483 (fowl typhoid antigens); 3488-3490 (brucellosis); 3493 (antigenic relationship between *Proteus* and *Brucella*); 3515-3516 (complement fixation in diagnosis of contagious agalactia); 3538, 3539 and 3541-3543 (F. & M. disease); 3546 (vaccination and spread of smallpox); 3547 (smallpox); 3548 (swine influenza); 3552 (cold haemagglutination with influenza virus); 3553 (influenza); 3555 (Japanese B encephalitis and Japanese equine encephalomyelitis); 3556 (equine encephalomyelitis); 3560-3565 (rinderpest); 3566 (enzootic abortion in ewes); 3569 (swine fever vaccine); 3570-3571 and 3574 (Teschen disease); 3578 and 3580-3581 (distemper vaccines); 3579 (killed tissue-virus vaccines); 3586-3587 (haemagglutination inhibition for differentiation of fowl plague and Newcastle disease); 3589-3591 and 3595-3596 (Newcastle disease); 3597 (infectious sinusitis of turkeys); 3606-3608 (serology in *Rickettsia* infections); 3645 (allergic test in parasitic diseases); 3656 (mouse tumours and antibody levels); 3678 (nutrition and resistance).

PARASITES IN RELATION TO DISEASE [GENERAL]

STEWARD, J. S. (1950.) **Notes on some parasites of camels (*Camelus dromedarius*) in the Sudan.**—*Vet. Rec.* **62.** 835-837. 3625

A note on some ectoparasites and helminths infesting camels, including *Hyalomma, Hippobosca maculata,* the larvae of *Cephalopsis titillator; Haemonchus longistipes, Trichostrongylus probolurus,* species of *Strongyloides, Stilesia hepatica,* hyatid cysts, *Onchocerca fasciata* and *Dipetalonema evansi* (?).

One spraying with benzene hexachloride (0·05% gamma isomer) gave a complete kill of all the ticks by the end of the next day. At the end of 10–12 days small numbers of ticks were reappearing.—D. W. JOLLY.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

ULLYETT, C. G. (1950.) **Competition for food and allied phenomena in sheep-blowfly populations.**—*Philos. Trans.* Ser. B. **234.** 77-174. 3626

Intra and inter-specific competition of five South African blowflies has been investigated. The predatory larvae of *Chrysomyia albiceps* had the highest survival value, those of *Lucilia* species and *C. chloropyga* and *C. marginalis* being lower in that order. The efficiency of *Lucilia* larvae depended on their rapid growth and smaller maximum weight. *Lucilia* and *C. chloropyga* are spring breeders and would not be greatly affected by *C. albiceps* and *C. marginalis* which are summer breeders.

It is concluded that blowfly populations largely depend on availability of carrion, but that destruction of carcasses found in the field could not be a useful control measure since many more would remain undiscovered.

—BERYL A. THURSTON.

JOHNSTONE, I. L. & SCOTT, M. T. (1951.) **Field trials on the prevention of body-strike in sheep by the use of DDT and BHC.**—*Aust. vet. J.* **27.** 79-82. [Authors' summary slightly modified.] 3627

The concentrations which were used and found effective in these trials were 1% D.D.T. or 0·1% γ-isomer B.H.C. (benzene hexachloride) when applied at the rate of approximately two pints per sheep. In one trial 1% D.D.T. at the rate of one pint per sheep appeared to be efficient. The insecticides were applied either by means of a jetting plant or in power-spray units in which only the top set of nozzles was used. The full period of protection could not be accurately assessed, but was considered to be at least one month and, under mild fly-wave conditions, it lasted at least ten weeks.

VANDERPLANK, F. L. (1948.) **Studies on the behaviour of the tsetse-fly, *Glossina pallidipes*, in the field: influence of climatic factors on activity.**—*J. Anim. Ecol.* **17.** 245-260. 3628

The number of *G. pallipides* caught on a stationary ox per quarter-hour was recorded, together with climatic data. The author regarded catches as almost entirely dependent on activity and not on activity × density. The catches-plus-one were converted into logarithms and correlated with climatic factors. The correlation between activity and saturation deficiency at a constant temperature was negative below 30°C and positive above. There was a strong negative correlation with radiated heat and light intensity, but none with wind velocity and barometric pressure.—BERYL A. THURSTON.

NASH, T. A. M. (1948.) **Tsetse for tyros. [Medical Department, Nigeria.]** pp.18. Lagos: Govt. Printer. 3629

This pamphlet for laymen describes, in very simple English, the life history of tsetse flies, the reason why their bite is dangerous and methods for the collection and identification of the flies. Instructions for forest clearing and simple precautions for man and animals are given.—BERYL A. THURSTON.

HARRISON, C. M. (1951.) **Inheritance of resistance to DDT in the housefly, *Musca domestica* L.** [Correspondence.]—*Nature, Lond.* **167.** 855-856. 3630

Contrary to previous reports that resistance of *M. domestica* to D.D.T. was a multiple gene character carried by both sexes, H.'s findings indicated a single-factor inheritance, non-resistance being dominant. The F_1 generation had a resistance similar, although slightly greater, than the non-resistant strain and in the F_2 there was a clear-cut segregation approximating a ratio of 3:1. A back-cross between an F_1 individual and a resistant fly gave a ratio of 1:1. The "decline in resistance" of a population bred without contact with D.D.T. is explained by the above theory, provided the strain is not composed of resistant individuals only.

—BERYL A. THURSTON.

HALL, A. V. (1951.) **Short history of tick eradication in the British Virgin Islands.**—*J. Amer. vet. med. Ass.* **118.** 180-110. 3631

Boophilus annulatus was eradicated from cattle in the British Virgin Islands during the second world war period by fortnightly dipping of all classes of livestock, excluding pigs and poultry, in sodium arsenite dips at a concentration of about 0·18% arsenious oxide. Few cases of arsenical poisoning in animals were reported. *Dermacentor nitens* was found to be difficult to eradicate from horses and other hosts by regular arsenical dipping. Results of this campaign indicate the necessity of educating the indigenous population in the importance of such control.—C.M.S.

ZOTTNER, CHEVRIER & CAMOU. (1948.) Le thiophosphate de P. nitrophényle et de diéthyle. Sa toxicité—son action contre les ixodes. **[The toxicity and action of *p*-nitrophenyldiethyl thiophosphate on ixodid ticks.]**—*Rev. Méd. vét., Lyon et Toulouse.* **99.** 554-557. 3632

Acting as a central nervous poison on ixodid ticks, this compound is active when given as a spray at a concentration of 1:2,500 on dogs and protects them for 12 days. At this dilution it is therapeutically safe.

—MALCOLM WOODBINE.

CASSAMAGNAGHI, A. JR. (1950.) Los primeros casos de sarna epidermoptica. **[Dermatitis caused by the mite *Epidermoptes bilobatus* in fowls.]**—*Bol. mens. Direcc. Ganad. Urug.* **31.** pp. 228-232. 3633

C. described a psoriasis-like dermatitis in fowls in Uruguay, caused by *Epidermoptes bilobatus*.—G. P. MARSHALL.

See also absts. **3472-3473** (*Stomoxys calcitrans* as transmitter of swine erysipelas); **3524** (tsetse flies); **3532-3533** (ticks, carriers of *Babesia* and *Eimeria*); **3602** (tick-borne fever in sheep); **3625** (parasites of camels); **3771** (report, Norway).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

LIENERT, E. (1949.) Kymographische Versuche über die Wirkung organischer Farbstoffe auf den grossen Leberegel (Fasciola hepatica.) **[Effect of organic dyestuffs on *Fasciola hepatica*.]**—*Wien. tierärtzl. Mschr.* **36.** 650-659. 3634

Improvements in the kymographic method of studying the action of drugs on the rhythmic contractions of *Fasciola hepatica* [*V.B.* **20.** 371] included the use of horse serum for keeping the flukes and of physiological saline (and once arachis oil) for dissolving the materials to be tested. The flukes could be kept alive for up to 2½ days. 27 dyestuffs were tested. Eosin and fluorescein were toxic for flukes *in vitro* at concentrations of 1:1,000 and as anthelmintics they would be relatively cheap and non-toxic to animals.—C.M.S.

SACQUET, E. (1948.) Les schistosomoses des animaux domestiques. **[The schistosome parasites of domestic animals.]**—*Thesis, Alfort.* pp. 118. 3635

S. stated that relatively little work has been carried out on schistosomiasis in domestic animals. He emphasized the morphological similarity of the various species and doubted whether a large number of species described are valid. He reviewed the literature on diagnosis, treatment, prophylaxis and pathology and also the general literature on the subject.

—K. B. SINCLAIR.

COLGLAZIER, M. L. & ENZIE, F. D. (1951.) **Notes on caricide as an anthelmintic for cats and dogs.**—*Proc. helminth. Soc., Wash.* **18.** 50-52. [Abst. from authors' summary.] 3636

In limited trials, caricide [1-diethylcarbamyl-4-methylpiperazine dihydrogen citrate] acted on ascarids in both dogs and cats, but not on hookworms, whipworms, or tapeworms (*Taenia* and *Dipylidium*). At a dose rate of 25 mg. per lb. body weight, administered in capsules after a fast of 18–24 hours, 98% of 182 ascarids were removed from 11 cats; lower dosages were less effective. Vomiting occurred in a few instances, and salivation was induced when capsules were crushed in the mouth, but there were no ill effects. At the same dosage nine out of ten ascarids were removed from 1 dog; and in other tests with the drug ascarids were removed from five dogs.

STANYON, J. H. (1951.) **Trichinosis in Sudbury, Ontario.**—*Canad. J. publ. Hlth.* **42.** 179-184. 3637

S. recorded two human cases. Trichinosis may be more prevalent in Canada than formerly realized.

BEARD, R. R. (1951.) **Incidence of trichinella infections in San Francisco, 1950.**—*J. Amer. med. Ass.* **146.** 331-334. [Author's summary copied *verbatim*.] 3638

Trichinella spiralis was demonstrated in 13 out of 160 diaphragms from unselected autopsies done in San Francisco between November 1949 and June 1950 in contrast with 24% in a series of 200 autopsies reported by McNaught and Anderson in 1936. This is attributed to the

lessened use of garbage-fed pork, more stringent regulation of the production of ready-to-serve pork foods and public education on the necessity of cooking pork.

MORINI, E. G. & GALOFRE, E. J. (1946.) Accion antiparasitaria y organica de la tenotiacina en el equino. **[Phenothiazine as an anthelmintic for horses.]**—*Publ. Fac. Agron. Vet., B. Aires.* No. 1. pp. 70. [English and French summaries.] 3639

Phenothiazine was effective against *Strongylus* and *Trichonema,* but not against *Taenia; Ascaris equorum, Oxyuris, Trichostrongylus, Habronema, Setaria;* and *Gastrophilus.* Optimal dosage and the best method of administration are described. Animals should not be previously fasted and phenothiazine treatment is contra-indicated in underfed and emaciated horses.

The importance of the condition of the animal, state of nutrition etc. in regard to treatment with phenothiazine was discussed. No changes were observed in the composition of the urine. Liver congestion and histopathological lesions in the kidneys were noted in animals that had died after such treatment, but the authors are not certain that these changes were caused by phenothiazine.—E. EDEN.

LEVINE, N. D. (1951.) **Screening tests of organometallic and other heavy compounds on horse strongyle larvae in manure.**—*J. Parasitol.* 37. 195-200. [Author's summary copied *verbatim.*] 3640

The effect of 27 organometallic and other heavy metal compounds on the development of horse strongyle larvae in manure was studied. Of seven silver compounds, 0·005 M. silver benzoate killed all larvae; the others were ineffective in a concentration of 0·01 M. Lead dodecyl sulfonate was effective at this concentration, but diphenyl lead dichloride and a derivative of it were not. Seven alkyl and three aryl mercury compounds were effective in low dilutions, those which killed all larvae at a concentration of 0·005 M. or less being mercury ethyl chloride, di-*n*-propyl mercury, di-*n*-butyl mercury, di-*sec*-butyl mercury, di-*iso*amyl mercury and dibenzyl mercury. *Iso*-amylarsonic acid was effective in a concentration of 0·0025 M., but three aryl arsenic compounds killed the larvae in a concentration of 0·01 M. or more. Barium perchlorate was effective in a concentration of 0·01 M., but triphenyl bismuthine and tributyl borate were not.

GELORMINI, N. (1949.) Enteritis parasitaria ovina por *Nematodirus.* **[Parasitic enteritis of sheep caused by *Nematodirus* spp.]**—*Rev. Med. vet., B. Aires.* 31. 180-186. 3641

G. described the occurrence in the Argentine of *Nematodirus* infestation in five sheep. The animals at first had a mixed infestation of *Haemonchus, Trichostrongylus, Ostertagia* and *Nematodirus.* Medication with copper sulphate, nicotine and carbon tetrachloride eliminated the other parasites but left *Nematodirus* unharmed. —I. W. JENNINGS.

GORDON, H. McL. & GREEN, R. J. (1951.) **Phenothiazine photosensitisation in sheep.** [Correspondence.]—*Aust. vet. J.* 27. 51-52. 3642

An account of photosensitization in lambs 4–6 weeks old in Tasmania after dosage with phenothiazine. The ewes had been treated with phenothiazine eight days before the lambs without ill-effects. Further cases were produced in other, not previously treated lambs on the property when treated three weeks after the initial outbreak.

Two "batches" of phenothiazine were used, that which caused the initial outbreak, and another lot manufactured on a different occasion. Both "batches" caused photosensitization.

An attempt to produce the condition in 120 lambs of similar age, running on similar pasture, on a Government Experimental Farm 20–30 miles distant was unsuccessful. Ewes and lambs from the Experimental Farm were taken to the site of the original outbreak about five weeks after the outbreak and lambs were dosed with phenothiazine after one, two and three weeks but photosensitization did not develop.

KEITH, R. K. (1951.) **The occurrence of *Ascaris vitulorum* Goeze 1782 in calves in Australia.**—*Aust. vet. J.* 27. 129. [Author's summary copied *verbatim.*] 3643

Ascaris vitulorum is recorded for the first time from cattle in Australia. The life history of this species is discussed, particularly in relation to the occurrence of pre-natal infestation.

BLAISDELL, K. F. (1950.) **A study of the biology of the cat lungworm *Aelurostrongylus abstrusus* (Railliet, 1898) Cameron, 1927.**—*Thesis. Cornell.* pp.84. 3644

An account of studies to determine the life cycle of the cat lungworm *A. abstrusus,* and if possible, to find a satisfactory treatment. The findings of Hobmaier and Gerichter were confirmed. Larvae from cat faeces penetrated the foot of a slug or terrestrial snail, moulted twice, were eaten by a cat, and developed into adults

in the lungs. Mice might also serve as auxiliary intermediate hosts. Other animals might also serve as intermediate hosts since neither cats nor mice readily eat slugs or snails. Neither caparside (an arsenic compound) nor fuadin (an antimony compound) produced any immediate effect on the production of eggs or viability of the larvae.—H. L. GILMAN.

SZAFLARSKI, J. (1950.) Zastosowanie próby allergicznej śródskórno-powiekowej w diagnostyce chorób pasożytniczych u zwierząt. **[An allergic intradermal palpebral test in the diagnosis of parasitic diseases in animals.]**—*Med. weteryn.* **6.** 585-589. [English and Russian summaries.] **3645**

Intradermal palpebral tests were carried out on cattle suspected of being infested with liver fluke and on sheep with *Dictyocaulus filaria,* the antigen being in each case prepared from the worms. It was stated that reactions occurred which S. considered to be specific. Details were given of the reactions.

—JOHN R. MITCHELL.

KEEP, J. M. (1951.) *Filaroides* (*Oslerus*) *osleri* **infestation in conjunction with a generalised infection in a greyhound.**—*Aust. vet. J.* **27.** 43-45. **3646**

This is the first certain record of *F. osleri* in Australia, although lesions suggestive of its presence had been observed previously. K. found some 30 brownish-white nodules, about 0·5 cm. in diameter, clustered on the tracheal mucosa in the region of the bifurcation. The nodules contained tightly coiled masses of *F. osleri*. It is not thought that the worms played any part in the syndrome described.

—H. McL. GORDON.

EUZÉBY, J. & LAINÉ, B. (1951.) Sur la périodicité des microfilaires de *Dirofilaria immitis.* **[Periodicity of *Dirofilaria immitis.*]** —*Rev. Méd. vét., Lyon et Toulouse.* **102.** 231-238. **3647**

Though the periodicity was diurnal, microfilariae could be detected at all times. The daily average varied during the month. Adrenalin markedly increased the number of microfilariae in peripheral blood. Periodicity did not correspond with increased body temperature nor did it depend on the products of metabolism of the host.—JAS. G. O'SULLIVAN.

NAGATY, H. F. (1947.) *Dipetalonema evansi* **(Lewis, 1882) and its microfilaria from** *Camelus dromedarius.*—*Parasitology.* **38.** 86-92. **3648**

216 adults were recovered from the right auricle of a camel. The morphology of this and the larval stage are given. Comparisons are made with similar stages in camels, previously described.—JAS. G. O'SULLIVAN.

See also abstr **3549** (lungworms in the aetiology of swine influenza); **3625** (parasites of camels); **3770-3771** (reports, Norway).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

COTCHIN, E. (1951.) **Neoplasms in small animals. No. I.**—*Vet. Rec.* **63.** 67-72. **3649**

DOUGLAS, S. W. (1951.) **Neoplasms in small animals. No. II.**—*Ibid.* 73-75. **3650**

PLATT, H. (1951.) **Neoplasms in small animals. No. III.**—*Ibid.* 75-78. **3651**

I. A survey of 1211 neoplasms from dogs and 115 from cats which were examined histologically at the Royal Veterinary College, London, during the ten-year period ending December 1949. The neoplasms were first classified according to their system of origin, and those of each system then considered in turn.

In the dog, 510 tumours from the skin, 269 from the female genital system, 204 from the alimentary system, 83 from the male genital system and 41 from the skeletal system were examined. Primary tumours of the respiratory, extra-genital, endocrine, and urinary systems were uncommon and 50 neoplasms were of uncertain origin.

Of the tumours of the skin, 167 were of epithelial and 173 of connective tissue origin, while the rest, including 81 melanomas and 42 probable undifferentiated carcinomas, were classified as of uncertain origin. In the female genital system, 209 of the tumours were from the mammary gland and 44 from the vagina and vulva. Fifty of the tumours of the alimentary system were tonsillar carcinomas, and 84 of the other tumours occurred in the mouth. No example of gastric carcinoma was encountered. Of the 66 testis tumours, 32 were of Sertoli-cell type, 22 were seminomas, and 7 were interstitial-cell tumours; in one testis, a seminoma and a Sertoli-cell tumour were present. The presence of alopecia and of "sex inversion" in some dogs bearing testis tumours was noted. 40 of the 41 primary tumours of bone were malignant.

In the cat, histologically malignant tumours were encountered more often than benign ones.

The majority of the epithelial tumours of the skin were of basal-cell or glandular origin. Eleven of the 33 tumours of the alimentary system were from the mouth, including two carcinomas of the tongue and two carcinomas of the tonsil. Ten oesophageal carcinomas were examined. Of the 14 bone tumours, all of which were malignant, 6 involved the humerus and 3 the femur. At least six of the seven neoplasms from the mammary gland were classified as adenocarcinomas.

II. D. considered a number of tumours of the dog from the surgical viewpoint, mentioning tumours of the skin, sarcoma of the eyelid, malignant melanoma, carcinoma of the inguinal region in males and circumanal adenoma, and tumours of the genital, alimentary, skeletal, urinary and respiratory systems. Stilboestrol may be used to keep multiple growths of circumanal adenoma in check, or to promote healing of ulcers prior to operation. In the cat, D. mentioned particularly carcinoma of the oesophagus, sarcoma of the mesenteric lymph nodes, ceruminous adenoma and bone tumours, and stressed the importance of differential diagnosis from TB.

III. Cancer in the dog and in man are similar in many ways, but there are differences which would repay study; *e.g.*, dogs appear to show multiple primary malignant growths more often than man, while on the other hand widespread metastases seem to be less often present in the dog than in man. Data are needed to show whether or not selective metastatic spread is seen in canine as in some human neoplasms. In man carcinoma of the stomach and of the large bowel together account for nearly half of all deaths due to cancer, but such tumours are rarely encountered in dogs. Bearing in mind the experimental production of mammary tumours in mice, and the incidence of mammary cancer in women, much might be learnt from a study of the statistical and other aspects of mammary tumours in the bitch. Comparative studies of tumours in dogs and cats, particularly with regard to aetiological factors, should be pursued. The frequency with which sweat and sebaceous glands are involved in skin neoplasia suggest that these structures may normally be responsible for the excretion of traces of carcinogenic substances in their products.—E. COTCHIN.

OLSON, C., JR. & COOK, R. H. (1951.) **Cutaneous sarcoma-like lesions of the horse caused by the agent of bovine papilloma.**—*Proc. Soc. exp. Biol., N.Y.* 77. 281-284. [Authors' summary copied *verbatim*.] 3652

Material derived from spontaneous field cases of bovine papilloma of the skin was capable of causing a sarcoma-like lesion in the skin of the horse. The tumuors so induced have some characteritics resembling equine sarcoid. The ability of an oncogenic agent to induce an epithelial tumor in one animal and to cause a new growth of connective tissue cells in another species is unique.

OTTOSEN, H. E. (1950.) Moderne synspunkter vedrørende de aegte svulsters aetiologi. [**Modern views on the aetiology of neoplasms.**—*Maanedsskr. Dyrlaeger.* 61. 349-362. 3653

The author discussed various theories concerning the causation of neoplasms, the stimulating effects of chemical and physical influences upon the growth of cells and the possible role of genetic and hormonal factors.—P. SCHAMBYE.

STRONG, L. C. & HOLLANDER, W. F. (1951.) **Spontaneous gastric neoplasia in mice of the Br-S strain. Incidence and genetic linkage tests.**—*Cancer Res.* 11. 94-99. [Authors' summary copied *verbatim*.] 3654

The incidence of adenomatous neoplasia of the stomach in mice of a control sub-line of the inbred Br – S strain is reported, with reference to age, sex and reproductive activity. The tumors rarely appear before the age of 6 months, but incidence in nonbreeders and in male breeders reaches a maximum at about a year. Breeder females show a marked lag and a much lower incidence at all ages. Size of tumor was somewhat correlated with age, although tumors of all sizes occurred at any age after about 10 months.

An outcross of this strain was made to obtain genetic linkage tests involving the genes *a, b, d,* and *se, p, W,* and a wavy-hair mutant. The incidence of gastric tumors was uniform in all classes, so that no linkage was indicated. This result contrasts with an earlier report of close linkage of *b* with the gastric tumor factor in tests with mice of the methylcholanthrene-treated line. Dominant inheritance with incomplete penetrance is indicated. In the present linkage-test population no relation of tumor incidence to body weight could be detected.

YOUNG, J. S. & GRIFFITH, H. D. (1950.) **The dynamics of parenchymatous embolism in relation to the dissemination of malignant tumours.**—*J. Path. Bact.* 62. 293-311. [Authors' summary slightly modified.] 3655

Proceeding from the thesis that all living animal tissues, neoplastic as well as non-neoplastic, consisting as they do of vascular tubes invested by a semi-solid medium, exemplify a differential pressure system, the author

described a hydrostatic model for studying the factors concerned in the ingress and egress of fluids containing suspended bodies, *e.g.* polystrene beads or fragments of a gel, through a hole or holes in the wall of a collapsible tube.

Bodies suspended in a fluid medium surrounding a collapsible tube with a hole in its wall cannot enter the lumen of the tube so long as the internal pressure is greater than the external; they can and do enter the lumen when —and only when—the external is greater than the internal pressure. Hence it is concluded that the formation of parenchymatous emboli consisting of fragments of normal tissue which lack amœboid or other penetrative ability of their own, is probably determined by a shift of the differential pressure so that the extravascular pressure rises above the intravascular.

The frequent occurrence of focal extravasation of blood into the more cellular or anaplastic varieties of malignant tumours admits of no doubt that the intravascular pressure of their intrinsic blood vessels is disproportionately high in relation to the tenuity of the vascular wall. The rupture of the blood-vascular wall and consequent disruption of the immediately adjacent parenchyma of the growth will allow small aggregates of tumour cells to enter the vascular channel if and when the extravascular pressure rises above the intravascular; that is to say, by hydrostatic means, like parenchymatous emboli of fragments of normal tissue and not by virtue of any vital property pertaining to the tumour cells, e.g. invasive growth. Possibly the entrance of tumour cells into the lumina of lymph-vascular channels is achieved by the same means.

WHARTON, D. R. A., MILLER, G. L., WHARTON, M. L., HANKWITZ, R. F., JR. & MILLER, E. E. (1951.) **The effect of tumors on antibody levels in mice.**—*Cancer Res.* **11.** 127-133. [Authors' summary copied *verbatim.*] 3656

As a result of immunization with various antigens, mice with certain transplanted tumors, namely, Sarcoma 37, Sarcoma 180, Earle's sarcoma L, a methylcholanthrene-induced fibrosarcoma, and Barrett's transplantable mammary adenocarcinoma, yielded antisera of a lower titer than those from similarly treated normal mice. Antisera from tumor-bearing mice had one-half or less than one-half, of the agglutinin titer of antisera from normal mice. In terms of precipitin N, immunized Swiss mice bearing Sarcoma 37 yielded as little as 40 per cent as much antibody as did similarly treated normal mice. Spontaneous mammary tumors did not elicit this effect, but a transplanted mammary tumor, TMC-1, acquired the property of doing so after thirteen transplantations. Mice in which tumors had regressed yielded amounts of antibody equal to those of normal mice. It was concluded that rapidly growing transplanted tumors lower antibody titers, but that slowly growing, or regressed, tumors do not do so.

The phenomenon was also demonstrable by passive transfer of mouse antisera into tumor-bearing and normal mice and was found to be specific, inasmuch as rabbit antisera passively tranferred in mice failed to show this difference. This indicated that an abnormally high destruction of antibody occurred in tumor-bearing mice. The effect did not appear to be due to inhibitors or to changes in other serum components.

BARRETT, M. K. & DERINGER, M. K. (1951.) **The effect of foster nursing on the growth of a transplantable tumor.**—*Cancer Res.* **11.** 134-138. [Authors' summary copied *verbatim.*] 3657

A mammary adenocarcinoma which originated in a strain C3H female and contained the mammary tumor milk agent, was transplanted into reciprocal F_1 hybrids between strains C3H and C. The tumor grew in all hosts but at a more rapid rate in those having a strain C3H mother than in those having a strain C mother. When the hybrids having a strain C mother were foster-nursed on strain C3H foster mothers, the difference was no longer present. The interpretation that the observed effect of foster nursing was due to the mammary tumor milk agent is considered to be possible but remains uncertain.

ANDERVONT, H. B. & DUNN, T. B. (1948.) **Further studies on the relation of the mammary-tumor agent to mammary tumors of hybrid mice.**—*J. Nat. Cancer Inst.* **9.** 89-104. [Abst. from authors' summary.] 3658

Three experiments to ascertain whether the milk of low-mammary-tumour strain C female mice contained the mammary tumour agent were performed by mating strain C females to strain C3H or agent free C3H males to procure F_1 hybrids. The F_1 hybrids were either mated to C3H or agent free C3H males to procure back-cross mice or were mated *inter se.*

The F_1 hybrid offspring of low-mammary-tumour strain C females and high-mammary-tumour strain C3H males showed a high incidence of mammary tumours whereas offspring of strain C females and agent-free C3H males showed a low incidence. This suggested that the C3H males may have exerted an influence on the occurrence of tumours in the F_1 hybrids. The progeny of the F_1 hybrids showed lower

tumour incidences than did their mothers. This suggested that if the F_1 hybrids acquired the agent from their C strain mothers, its activity was not enhanced in their descendants.

The agent was present in two litters of F_1 hybrids born to C3H males; in one it was present in all four females and in the other it was detected in two or three females. It was impossible to determine whether the agent was transmitted to the F_1 hybrids in the strain C mother's milk as one died before tumours appeared in its offspring, and the other died before a diagnosis was made of the first tumour of its offspring.

The discussion is concerned chiefly with possible routes whereby the agent gained access to the F_1 hybrids.

GOLDFEDER, A. & ALBAUM, H. G. (1951.) **Phosphorylated intermediates in glycolysis of analogous mouse mammary tumors. I. Mouse mammary tumors of the dba and C3H strains.** —*Cancer Res.* **11.** 118-121. [Authors' summary copied *verbatim.*] **3659**

Data are presented on the levels of intermediates in the glycolytic cycle for two mouse mammary adenocarcinomas, one of which is normally rapidly growing (dbrB) and the other relatively slowly growing (C3H). The pattern of compounds present corresponds to that found in normal differentiated tissues, except that the lactic acid level is considerably higher in these tumors.

The more rapidly growing mammary tumor (dbrB) shows significantly higher levels of glucose-1-phosphate, adenosine triphosphate, and possibly glycogen, and a lower level of inorganic phosphorus than those of the C3H mammary tumor. These findings are in agreement with other studies carried out with this tumor and strongly suggest that a higher level of energy is available for vital function in the dbrB tumor.

The significance of the *in vitro* and *in vivo* differences in the lactic acid production of the two mammary tumors is discussed.

GLINOS, A. D., BUCHER, N. L. R. & AUB, J. C. (1951.) **The effect of liver regeneration on tumor formation in rats fed 4-dimethyl-aminoazobenzene.**—*J. exp. Med.* **93.** 313-324. [Authors' summary copied *verbatim.*] **3660**

Partial hepatectomies were performed on five groups of rats which had been maintained on a diet containing 4-dimethyl-aminoazobenzene for various lengths of time. The effect of regeneration on the incidence of hepatic tumors was compared with that in similarly treated non-hepatectomized controls.

Regeneration, and the time of exposure to the carcinogen as well, were relatively effective in accelerating the rate of appearance of tumors, although not markedly so. These factors were without effect on final total tumor formation.

These findings support the concept that during chemical carcinogenesis tumor formation proceeds in stages.

OKER-BLOOM, N. (1951.) **The behaviour of virus from chicken and duck tumors in embryonated eggs of chickens and ducks.**—*Acta path. microbiol. scand.* **28.** 1-16. [In English. Authors' summary modified.] **3661**

Previous statements regarding the growth of chicken virus tumors on the chorio-allantoic membrane of the embryonated egg have been confirmed, and some previously untested tumors have been successfully cultivated on the membrane. The main lesions induced in the embryo, using different routes of inoculation, are of a hemorrhagic nature. With cell-free inoculum of a virulent variant of the Rous sarcoma in ducks it was not possible to induce neoplasia in the embryos by any of the inoculation routes used, including piercing of the embryo. Contradictions in earlier experiments regarding the reaction of the embryo to the Rous sarcoma virus may have been due to variations in the virulence of the virus.

DMOCHOWSKI, L. (1948.) **Investigations of the properties of agents causing fowl tumors. I. Attempts at isolation of the fowl-tumor agents by differential centrifugation. II. Attempts at isolation of the fowl-tumor agents by chemical methods. III. Attempts at desiccation of the fowl-tumor agents freed from extraneous proteins.**—*J. Nat. Cancer Inst.* **9.** 57-67, 69-72 & 73-75. [Authors' summaries modified.] **3662**

I. Methods based on alternate high- and low-speed centrifugation of Rous and Fujinami tumour extracts combined with complement-fixation tests of material from various stages of centrifugation with rabbit anti-Rous Berkefeld filtrate and anti-normal fowl plasma immune sera and with activity tests in fowls, were used to obtain active Rous and Fujinami agents separated at least to a certain extent from extraneous fowl proteins.

The anti-Rous Berkefeld filtrate fixed complement with the final suspensions of Rous and Fujinami agents while the high-titre antifowl plasma sera did not. The tumour-inducing activity of the final preparation was at least equal to that of crude sand and paper-pulp filtrates of Rous and Fujinami tumours.

A parallelism was shown to exist between

the tumour-inducing activity of the agents and complement-fixation with anti-Rous Berkefeld sera.

There was a considerable serological similarity between complement-fixation tests with purified Rous and Fujinami agents, while at the same time they appeared to be antigenically different from normal-fowl-tissue components.

The degree of separation of Rous and Fujinami tumour agents from normal constituents of fowl tissues, as found in complement-fixation tests, is subject to limitations of the sensitivity of the test and of the potency and specificity of the immune sera employed.

II. By adsorption of sand and paper-pulp filtrates of fresh and dried Rous sarcoma, Fujinami myxosarcoma, and Mill Hill 1 fibrosarcoma on aluminium hydroxide, followed by dialysis with stirring of the remaining supernatant, fowl-tumour agents of the three tumours were separated from at least some of the accompanying proteins and other substances derived from the tumour tissue. The tumour-inducing activity of the final suspension containing the agents of Rous and Fujinami tumours was found to be at least 45% and of Mill Hill 1 tumour 60% greater than that of the original material.

III. Preliminary freezing with desiccation in a high vacuum system was chosen to preserve suspensions of the fowl-tumour agents, of Rous, Fujinami, and Mill Hill 1 tumuors, freed from extraneous fowl proteins [see preceding absts.], in an active form. The method proved to be effective when, previous to the desiccation, hydrocyanic acid was added to the suspensions.

The tumour-inducing activity of the suspensions reconstituted after drying in the presence of hydrocyanic acid amounted to between 60 and 80% when compared with that of the purified preparations before drying. The activity was taken as an indication of the ability of different preparations to induce tumours and not as a measure of the actual amount of active material.

See also abst. 3773 (report, U.S.A.).

ISAKSSON, A. (1950.) Hönsleukoser med särskild hänsyn till åldersfördelningen vid den viscerala lymfatiska leukosen. [**Leucosis in fowls. Age disposition of White Leghorn hens to visceral lymphomatosis.**]—*Nord. Vet.-Med.* 2. 1065-1073. [English and German summaries. Abst. from English summary.] 3663

A study was made of a poultry population including 35,381 White Leghorn hens originating from 57 breeding and production flocks in Sweden. 469 birds, of which 461 were adults, died of visceral lymphomatosis in these flocks during the period of observation.

There were no real differences in the percentage figures in the corresponding age classes and the author concluded that visceral lymphamatosis in White Leghorn hens is not a disease especially attacking young birds, but a disease rather evenly distributed within all the age classes usually occurring in a modern poultry flock. The fact that most diseased birds are young is due to the predominance of young birds in the flock.

LUCAS, A. M. (1951.) **Lymphoid tissue and its relation to so-called normal lymphoid foci and to lymphomatosis. VI. A study of lymphoid areas in the pancreas of doves and pigeons.**—*Poult. Sci.* 30. 116-124. 3664

Associated with ectopic lymphoid areas in the pancreas of doves and pigeons there was evidence of destruction of the host tissue and it was concluded that such foci are abnormal. L. discussed the possible association of these foci with lymphomatosis.—D. LUKE.

NUTRITIONAL AND METABOLIC DISORDERS

CUNNINGHAM, I. J. (1949.) **The control of copper deficiency in lambs in New Zealand.** —*N.Z. J. Sci. Tech.* 31. Sect. A. 42-48. [Author's summary copied *verbatim*.] 3665

On peat soils in New Zealand copper deficiency symptoms amongst ovines, which are of practical significance in sheep farming, are shown only by lambs which develop enzootic ataxia. This disease is an uncomplicated copper deficiency.

If regular supplies of copper are given to the ewe, either by top-dressing the pasture or by drenching, complete control of the disease in lambs is established. The different drenching procedures found effective included three drenches each of 2·5 g. copper sulphate to the ewes in the mid-gestation period, and drenching of ewes started seven weeks before lambing commenced.

Twice weekly drenching of lambs with small amounts of copper, commenced shortly after birth, also prevented any cases of enzootic ataxia.

Symptoms do not develop in lambs born the first year after normal ewes are brought on to copper-deficient areas, but a high proportion of lambs of the second and subsequent years are affected. Control of the disease by this

method would require the introduction of fresh ewes each year.

The most satisfactory method of control is to topdress the copper-deficient pastures with copper-containing fertilizers.

KEENER, H. A., BALDWIN, R. R. & PERCIVAL, G. P. (1951) **Cobalt metabolism studies with sheep.**—*J. Anim. Sci.* **10.** 428-433. [Part of author's summary and conclusions copied *verbatim.*] **3666**

Using labeled cobalt in the form of the sulfate, it was found that very small amounts of injected cobalt do reach the rumen contents. It appears that the amount of such cobalt reaching the rumen contents may be adequate under certain conditions to bring about a slow recovery from the deficiency. Labeled cobalt in the form of the carbonate was found to be absorbed in appreciable quantities as indicated by its presence in the blood and urine.

BECKER, D. E. & SMITH, S. E. (1951.) **The level of cobalt tolerance in yearling sheep.**—*J. Anim. Sci.* **10.** 266-271. [Authors' summary copied *verbatim.*] **3667**

Data have been secured to determine the level of dietary cobalt tolerated by fattening yearling sheep. Yearling wethers fed a ration of shelled yellow corn, soybean oil meal, and mixed legume hay have been drenched daily with cobalt chloride at levels varying from 10 to 500 mg. of elemental cobalt per centiweight [100 lb. body weight] daily for periods up to eight weeks. Results obtained show that levels up to 160 mg. of cobalt per centiweight daily can be tolerated for at least eight weeks without harmful effects. Dosages of 200 or 500 mg. of cobalt per centiweight daily caused a severely depressed appetite and body weight losses; an anemia was noted at the higher level. Polycythemia was absent, and blood sugar determinations revealed no significant departure from normal. Endeavors to produce polycythemia in six sheep by daily intravenous injections of cobalt at the rate of 75 mg. of cobalt daily resulted in death of two of the animals; there was no elevation of the hemoglobin level. Pathological studies of the sheep which died of cobalt toxicosis showed fatty infiltration of the liver, and slight pulmonary edema and congestion in all cases. In addition, three animals which received the highest cobalt intake also showed petechial to ecchymotic hemorrhages in the small intestine.

SMITH, S. G. (1951.) **Respiration and paralysis as they relate to magnesium-potassium antagonism.**—*Amer. J. Physiol.* **164.** 702-709. [Author's summary slightly modified.] **3668**

Thirty-one experiments have been performed on 17 dogs in which paralysis was produced by the parenteral administration of magnesium salts ($MgSO_4$ or $MgCl_2.6H_2O$.). Along with the neuromuscular changes incident to the magnesium administration there were very characteristic respiratory changes, *i.e.* acute respiratory distress involving gasp-like breathing with marked decrease in rate demonstrable only after the animal is completely paralyzed. The data presented indicate that while potassium (as KCl) antagonizes the respiratory changes completely, it does not completely prevent the neuromuscular paralysis produced by magnesium. It has been previously demonstrated that magnesium when injected into the blood stream lowers the serum potassium to a degree comparable to that seen in direct dietary potassium depletion and it is suggested that the respiratory changes described here are due to a potassium deficiency produced indirectly by the magnesium.

These respiratory changes resemble those observed in dogs and chicks depleted of potassium as well as those in patients suffering from conditions associated with a potassium lack such as periodic paralysis, prolonged diarrhea and recovery from diabetic coma.

The addition of KCl to the parenteral solution of $MgSO_4$ decreases the depth of the paralysis, commensurate to the extent to which it restores the K level and decreases the Mg content of the serum.

HENRIKSON, H. W. (1951.) **Effect of potassium deficiency on gastrointestinal motility in rats.**—*Amer. J. Physiol.* **164.** 263-273. [Author's summary and conclusions modified.] **3669**

The effect of potassium deficiency and desoxycorticosterone on gastrointestinal motility, and of subsequent therapy with potassium, was investigated in rats and dogs by direct observation and by barium series.

In severely deficient rats the tone and movements were progressively reduced until complete paralysis of the digestive tract occurred. In force-fed rats, death occurred in an average of 11 days from severe gastrointestinal distension, whereas adult rats fed *ad libitum* died in about 3 months with similar changes. Potassium injections in deficient rats stimulated active movements within an hour or less and produced almost complete evacuation of barium, etc. in the day of treatment. In rats fed the control diet, motility was restored almost to normal

within a week. The severe changes produced by potassium deficiency could be completely reversed by feeding purina, but not by the control diet. The factors of diet, force-feeding, experimental procedure and housing were discussed in relation to gastrointestinal motility. In adult potassium-deficient dogs, some changes in the gestrointestinal motility occurred, but they were not comparable to those produced in rats. Vascular and bladder changes occurred in potassium-deficient rats which indicated reduced tone of the smooth-muscle. Histological studies showed no significant changes in smooth-muscle of deficient rats. Paralysis of hind and fore limbs occurred in a small percentage of potassium-deficient rats.

BRISTOL, W. R. (1951.) **Relation of sodium chloride depletion to urine excretion and water intoxication.**—*Amer. J. med. Sci.* **221.** 412-416. [Author's summary copied *verbatim.*] 3670

Water tolerance tests were performed in animals with normal or low serum sodium values. In the dog and rat the reduction of serum sodium can markedly interfere with the excretion of the administered water. There is a definite correlation between the decrease in serum sodium and the amount of urine excreted.

There is a definite relationship between the serum sodium concentration and the rapidity of progression of signs and symptoms of water intoxication. As the serum concentration was lowered, fewer hydration doses of water were required to produce this intoxication.

The effect of low sodium on urine excretion in these animals is discussed in relation to the fluid retention and signs or symptoms that may occur in patients receiving a low salt diet.

EWER, T. K. (1950.) **Rachitogenicity of green oats.** [Correspondence.]—*Nature, Lond.* **166.** 732-733. 3671

Lambs and g. pigs, receiving adequate calcium and phosphorus, developed rickets when fed upon young green oats. The condition was cured by giving vitamin D_2. Growth was not impaired.—R. MARSHALL.

CORDIEZ, E. (1949.) Vitamine A et capacité reproductrice de la vache. **[Vitamin A and fertility in cows.]**—*Ann. Méd. vét.* **93.** 209-224. 3672

A general account of the work already published on the vitamin A requirements of cattle is given. The evidence suggests a close connexion between vitamin A and reproduction, a blood level of less than 80μg. being associated with cases of abortion, retained placenta and failure to conceive.—J. A. NICHOLSON.

CHAPLIN, H., JR., CLARK, L. D. & ROPES, M. W. (1951.) **Vitamin D intoxication.**—*Amer. J. med. Sci.* **221.** 369-378. [Authors' summary copied *verbatim.*] 3673

The characteristics of the syndrome of hypervitaminosis D have been described and data available on over 100 cases from the literature have been summarized. Seven additional cases seen at the Massachusetts General Hospital within the past three years have been decribed in some detail, with emphasis upon the findings of band keratitis and metastatic calcium cysts. The histology of these cysts has been described as well as the nature of the Ca/P ratio of their contents. Current methods of treatment of the syndrome are described. In addition to the already available evidence regarding the inefficiency of non-specific therapeutic use of vitamin D, as in most of the conditions listed earlier in this paper, special stress is laid upon the hazards of such therapy. If vitamin D is used in massive doses, it is pointed out that careful follow-up is obligatory for the early detection of the clinical and laboratory manifestations of intoxication.

PINKIEWICZ, E. (1950.) Próby leczenia mięśniochwatu przy pomocy witaminy B_1. **[Treatment of paralytic myohaemoglobinuria with vitamin B_1.]**—*Med. weteryn.* **6.** 162-163. 3674

In treatment of cases of equine paralytic myohaemoglobinuria P. administered two intramuscular injections of vitamin B_1 at a dose rate of 300 mg. The result was manifested by the disappearance of symptoms in two days. Depending on individual cases, sodium bicarbonate, urotropine and caffeine appear to be of value as secondary therapeutic agents together with vitamin B_1.—JOHN R. MITCHELL.

MATHON. (1950.) Au sujet de quelques observations sur l'avitaminose B_1, ou béribéri du chien en Indochine. **[Thiamine deficiency in dogs in Indo-China.]**—*Rev. vét. milit.* **5.** 69-72. 3675

Beri-beri developed in two dogs which had subsisted for four months on a diet of rice and preserved meat under military training conditions in Indo-China.—N. DEAN.

SWANK, R. L. & ADAMS, R. D. (1948.) **Pyridoxine and pantothenic acid deficiency in swine.**—*J. Neuropath. exp. Neurol.* **7.** 274-286. 3676

Piglets 4–8 weeks old were placed on a

vitamin B-free diet supplemented by synthetic vitamins except pyridoxine in the case of one group, and pantothenic acid in another. Two control groups were maintained, one on a commercial feed on free range, and the other on the experimental diet plus all synthetic B group vitamins and dried liver. The sties of all except the third group were cleaned out frequently to prevent coprophagia.

Within four weeks the pyridoxine deficient animals developed a hypochromic microcytic anaemia and a disturbance of the gait, beginning posteriorly and spreading forward and increasing in degree. Later, generalized convulsions occurred, each seizure lasting several minutes.

In the pantothenic acid deficient pigs, symptoms of dysentery and poor growth were noted. After about eight weeks ataxia developed with a high "goose-stepping" gait.

Sixteen vitamin-deficient animals were examined histologically. The lesions in the two groups were essentially similar, consisting of ascending degeneration of the peripheral nerves, and degenerative changes in the cells of the posterior root ganglia and their central axons.

The control animals receiving the experimental diet grew much more slowly than those on range, and developed a stiffness of the hind limbs. It was suggested that another factor or factors may have played some part in the production of ataxia.—J. T. Done.

Lehrer, W. P., Jr., Wiese, A. C., Moore, P. R. & Ensminger, M. E. (1951.) **Pyridoxine deficiency in baby pigs.**—*J. Anim. Sci.* **10.** 65-72. [Authors' summary modified.] 3677

In these experiments pyridoxine deficiency in baby pigs was characterized by poor appetite, incoordination of the muscles, spastic gait, poor growth, epileptiform fits, comas, rough coat, brown exudate around the eyes, and impairment of vision.

The adequate supplementation of pyridoxine cured all the symptoms with the exception of the impairment of vision.

Chandler, L. U. (1951.) **Nutritional aspects of resistance.**—*J. Amer. vet. med. Ass.* **118.** 179-183 & 256-260. 3678

The importance of intestinal motility and condition of the intestinal mucosa in resistance to infection is stressed. A high protein diet promotes these conditions and also discourages parasites; the vitamin B group also promotes satisfactory condition of the intestine, and ensures adequate production of phagocytes; vitamin C appears to have a function in resistance but vitamin D does not.—R. Marshall.

Christensen, N. O. & Schambye, P. (1950.) Om diabetes mellitus hos kvaeg. Kliniske, biokemiske og patologisk-anatomiske undersøgelser af et tilfaelde hos en ko. [**A case of diabetes mellitus in a cow. Clinical, biochemical and pathologico-anatomical studies on a diabetic cow.**]—*Nord. Vet.-Med.* **2.** 863-898. [English and German summaries. Abst. from English summary.] 3679

A survey of diabetes mellitus in domestic animals, particularly the cases described in cattle, was made and a case of diabetes mellitus in a Jersey cow, about six year old, that was studied for about six months was reported.

Clinically this case was characterized by marked emaciation, weakness and loss of appetite, while the animal's thirst seemed normal. Hyperglycaemia, glycosuria, ketonaemia, ketonuria, and acidosis were also demonstrated.

The condition of the cow improved with insulin treatment, and the body weight increased. At first a dose of only 100 I.U. every second day was sufficient. Subsequently, however, the insulin requirement increased and after four months a daily dose of 300 I.U. was necessary.

After discontinuance of insulin therapy for a few days the reaction of the cow to large doses of insulin was investigated for seven days.

Insulin therapy was then discontinued. Nevertheless, the appetite of the animal remained fairly normal. Glycosuria reappeared, together with ketonuria and ketonaemia.

The cow was starved for six days. This was followed by a fall in the blood sugar content to about 150 mg. %, a simultaneous decrease of the ketone body content of the blood and less pronounced acidosis. After four days' starvation the glycosuria ceased, and after six days the urine reaction was negative for acetone. It was a striking feature that the cow's thirst diminished quite considerably during the period of starvation.

Details of the various tests during the last three weeks before the animal was killed are given.

The glucose tolerance of the cow was repeatedly determined. During the first and third months the tolerance was low, but after the establishment of the hypoglycemia as well as after the period without insulin dosage, and during the period of starvation it was practically normal.

Histological examination revealed decrease

in number and size of the islets of Langerhans, vacuolar degeneration of the islets and extensive infiltration of their surroundings with lymphocytes. The other endocrine organs were normal.

The differences in diabetes of ruminants and of carnivores and man are discussed in accordance with modern views on the physiology of ruminants.

See also abst. 3748 (nutrition and reproduction).

DISEASES, GENERAL

VEENENDAAL, H. (1950.) Maanblindheid. (Moonblindness, Fluxion périodique, Mondblindheid). **[Periodic ophthalmia in horses.]** —*Tijdschr. Diergeneesk.* **75.** 14-20. 3680

A discussion of the literature.

—C. A. VAN DORSSEN.

SELÇUK, H. (1950.) Gaziantep'de görülen ve Borno zannedilen hastalik üzerinde. **[Disease in Gaziantep (Turkey) simulating Borna disease.]**—*Askeri Veteriner Dergisi.* **26.** 479-483. 3681

In March 1949, 44 out of 1,031 horses belonging to a military unit died after nervous symptoms lasting for 3–12 days. Examination of the brain and cord bacteriologically, histologically (inclusion bodies) and by inoculation into rabbits, g. pigs, mice and pigeons gave negative results. The disease was not considered to be due to a virus but an intoxication due to spoiled hay.—N. KARAMIZRAK.

BOUCKAERT, J. H. (1950.) Rumen-digestie en pathologie. **[Ruminal digestion and pathology.]**—*Vlaam. Diergeneesk. Tijdschr.* **19.** 85-93. [English, French and German summaries.] 3682

A discussion on recent literature.

—C. A. VAN DORSSEN.

BURNS, M. & AUBER, L. (1951.) **Some abnormalities of keratinization in the skin of sheep.** —*J. comp. Path.* **61.** 38-47. [Authors' summary slightly modified.] 3683

The skin of a lamb from which widespread fibre-shedding had occurred was found to contain numerous abnormal degenerate follicles. Three types of degeneration are described which differ in their effects on the more proximal parts of the follicle. In many instances what appears to be secondary dekeratinization of the fibre cortex occurs near the skin surface, and none of the degenerate follicles contained a normal fibre.

The possible relations between the various types of follicle degeneration are discussed and it is concluded that the different types are not necessarily successive stages of one process.

No additional information was obtained as to the fate of the secondary follicles which the follicle population counts indicated to have been lost.

GWATKIN, R., PLUMMER, P. J. G., BYRNE, J. L. & WALKER, R. V. L. (1951.) **Rhinitis of swine. V. Further studies on the aetiology of infectious atrophic rhinitis.**—*Canad. J. comp. Med.* **15.** 32-38. 3684

The first litter of a naturally affected gilt became infected. The second litter remained healthy. Nasal washings heated for one hour at 45°C. were infective, but not after heating at 65°C. for one hour. After admixture with 2,400μg. streptomycin and 3,300 I.U. penicillin for 30 min. the material was not infective. Filtrate, supernatant fluid and bacterial cultures from the lesions failed to produce the disease. Of a group of pigs inoculated with suspension from lesions or with supernatant fluid of suspension plus washed sediment 61·3% became infected, whereas in groups inoculated with washed sediment and broth, and washed sediment and filtrate, only 8·3% became infected. Anaemia did not prove to be a predisposing factor. Subcutaneous injection with infective material produced severe lesions and death in rabbits, but nasal instillation of material from the lesions had no effect on piglets. An attempt to concentrate the aetiological agent in the respiratory tract of rabbits failed. Attempts to demonstrate a penetrating factor in nasal washings from affected pigs were negative.—THOMAS MOORE.

POWER, P. N. (1950.) **Some observations on diseases of swine with special reference to oedema of the bowel.**—*Irish Vet. J.* **5.** 212-214. 3685

A short clinical account of oedema disease of pigs was given. Affected pigs were given an injection of anthisan (a proprietary antihistaminic) and carbamyl choline, then placed in a tub of cold water for 2–3 min., the cold water treatment being repeated in two hours. All incontacts were deprived of food for two days and dosed with ferrous sulphate daily, saline purgatives being added on the second day. P. states that this treatment yielded good results.

—J. T. DONE.

SAPHIR, O. & LOWENTHAL, M. (1951.) **Changes in the endocardium of pigs simulating the rheumatic stigmata of man.**—*Amer. J. Path.*

27. 211-229. [Abst. from authors' summary.] 3686

Of 1,000 hearts of pigs eight months old or less examined with the naked eye, and 850 hearts of pigs one year old or more examined also microscopically, 200 of the first group had no gross evidence of disease. Evidence of old healed endocarditis was found in 10% of the remaining 1,650. Recent endocarditis was found in 20; in eight it was characterized by huge vegetations, in two of which *Erysipelothrix rhusiopathiae* was demonstrated.

Among the 850 hearts examined grossly and microscopically, old healed endocarditis of the mitral valve was found in 82; of the left atrial mural endocardium in 78; of the aortic valve in 6; and of the left ventricular mural endocardium in 16. The myocardium was involved in 62. Myocardial fibrosis was found 38 times and myocardial infarction 5 times. It seems likely that the old valvular endocarditis and the old lesions of the left atrial endocardium were the result of healed bacterial endocarditis, caused by organisms relatively commonly encountered in acute endocarditis in pigs. A marked resemblance was noted between the gross and microscopic changes of the mitral valve and of the left atrium in the porcine hearts and the changes in human hearts usually regarded as the result of old rheumatic endocarditis. Because of this resemblance, the inference is made that many of the heart lesions in man diagnosed as old rheumatic endocarditis, in the absence of Aschoff bodies or structures interpreted as healing Aschoff bodies, may also be regarded as the results of a previous bacterial endocarditis.

OLSSON, S.-E. (1951.) **On disc protrusion in dog (*Enchondrosis intervertebralis*). A study with special reference to roentgen diagnosis and to the value of disc fenestration.**—*Acta orthopedica scand.* Suppl. No. 8. pp. 95. [In English: German summary.] 3687

A study of 33 dogs with 54 disc protrusions revealed that the main changes were calcification of the protrusions and a reduced space between the surrounding vertebrae, with marginal deposits. Thorotrast myelography was found the most suitable method of demonstrating the displaced discs. The operation of disc fenestration is described and illustrated.

—J. A. NICHOLSON.

DOCK, W. (1950.) **The causes of arteriosclerosis.** —*Bull. N.Y. Acad. Med.* 26. 182-188. 3688

A rise in blood and tissue cholesterol precedes and accompanies arteriosclerosis and the latter is rare in races living on high carbohydrate and low fat diets. Cholesterol deposition appears to occur where there is a state of constant motion as in the epicardial parts of the coronary arteries. High arterial tension increases the rate at which plasma filtrate is forced into the intima, also the tension increases the rate of vibration of the intimal tissues.

—JAMES H. HALE.

CAMERON, G. R., DE, S. N. & SHEIKH, A. H. (1951.) **Cardio-vascular responses to air embolism.**—*J. Path. Bact.* 63. 181-194. [Authors' summary slightly modified.] 3689

Air was introduced intravenously into rabbits at controlled speeds and pressures. The pathological changes and certain functional disturbances in the cardio-vascular system due to this air embolism are discussed and contrasted with the effects of other types of embolism. Reasons are given for excluding vagal inhibition of coronary flow, obstruction of the coronary veins by air bubbles, coronary arterial embolism and primary cerebral ischaemia as factors in the circulatory upset and it is concluded that death results from pulmonary block by air bubbles. Attention is drawn to the tolerance rabbits show for sudden ligation of both carotid arteries, probably because of an efficient vertebral circulation.

NAIRN, R. C. (1951.) **Oedema and capillary anoxia.**—*J. Path. Bact.* 63. 213-234. [Author's summary slightly modified.] 3690

In order to obtain direct evidence of the effects of local anoxia on capillary permeability and the production of oedema, experiments were performed under controlled conditions on dogs in which the femoral artery of one hind limb was perfused with venous blood from the femoral vein of the opposite hind limb. The average oxygen saturation of the perfusing blood was in the region of 50 per cent. and the duration of the perfusion was usually 6 to 7 hours.

In one group of experiments uncomplicated perfusions were carried out; oedema did not develop in the anoxic perfused limb. In a second group various modifications of the simple perfusion technique were made, and these confirmed the validity of this method of investigating oedema. In the remaining experiments, the perfusion method was used in dogs in which oedema had been produced by saline infusion, plasmaphoresis, venous congestion or local injection; anoxia did not aggravate the oedema in the perfused limb nor reduce its rate of reabsorption.

The evidence from these experiments and from a critical analysis of the literature suggests that capillary anoxia plays no part in the production of oedema.

WABNITZ, C. H. (1951.) **Hyperbilirubinemia. I. A rapid screening test for its detection.**—*J. Lab. clin. Med.* **37.** 477-480. [Author's summary copied *verbatim.*] **3691**

A paper strip, drop-reaction test is described which affords a simple, direct, dependable screening test sufficiently sensitive to detect hyperbilirubinemia.

The test can be done on 1 drop of serum in one minute. The technique is simple, the easily prepared reagents and paper strips are stable, and no elaborate equipment is required.

I. KELLNER, A., CORRELL, J. W. & LADD, A. T. (1951.) **Sustained hyperlipemia induced in rabbits by means of intravenously injected surface-active agents.**—*J. exp. Med.* **93.** 373-383. **3692**

II. KELLNER, A., CORRELL, J. W. & LADD, A. T. (1951.) **The influence of intravenously administered surface-active agents on the development of experimental atherosclerosis in rabbits.**—*Ibid.* 385-398. [Authors' summaries copied *verbatim.*] **3693**

I. The intravenous injection of the surface-active agents Tween 80 and Triton A20 into rabbits fed a normal diet resulted in marked and sustained elevations of the cholesterol, phospholipid, and total lipid content of their blood. The increase in phospholipid in general paralleled that of the blood cholesterol.

The implications of the findings are briefly discussed.

II. A study was made of the relationship of blood lipids to the development of experimental atherosclerosis.

Rabbits fed a diet containing cholesterol were found to develop hyperlipemia characterized by a great increase in blood cholesterol and a much lesser increase in blood phospholipoids; after several weeks they manifested conspicuous atherosclerosis of the aorta, as has often been observed by others. Comparable rabbits fed the same diets containing added cholesterol were given in addition repeated intravenous injections of the surface-active agents Tween 80 and Triton A20; these animals developed hyperlipemia which was characterized by a great increase in blood cholesterol and an equivalent or even greater increase in phospholipids, and they had much less atherosclerosis than did the control rabbits fed cholesterol alone.

In further experiments it was observed that repeated intravenous injections of Tween 80 did not result in resorption of previously induced atherosclerosis in rabbits.

The findings are discussed in relation to the pathogenesis of natural and experimental atherosclerosis.

DOUGLAS, D. M., GHENT, W. R. & ROWLANDS, S. (1951.) **Production of hypochlorhydria by beta radiation of the stomach.**—*Lancet.* **260.** 492-495. [Authors' summary copied *verbatim.*] **3694**

The gastric mucosa of dogs has been irradiated with β rays from an intragastric balloon containing P^{32}. Gastric secretion was studied before and after irradiation. After irradiation all the dogs showed a reduced amount of free hydrochloric acid in the gastric juice. Apart from an average weight loss of 2·2 kg. they maintained good health. The duration of the induced hypochlorhydria, the best dosage of β radiation, and the possibility of late carcinogenesis are being investigated.

LUEDTKE, W. E. & ANGEVINE, D. M. (1950.) **Factors influencing the formation of cartilage in the healing of experimentally induced fractures.**—*Arch. Path.* **49.** 474-478. **3695**

The authors fractured the tibias of rats, g. pigs and rabbits and examined the hyaline cartilage present at the fracture sites after healing had occurred. They found that the amount of cartilage present in the callus varied with the type and mobility of the fracture and with the species of animal, but neither age nor sex, within the range of animals used, were important.—R. N. SMITH.

MCLEAN, C. R., FITZGERALD, J. D. L., YOUNGHUSBAND, O. Z. & HAMILTON, J. D. (1951.) **Diffuse glomerulonephritis induced in rabbits by small intravenous injections of horse serum.**—*Arch. Path.* **51.** 1-11. [Authors' summary slightly modified.] **3696**

Thirty-one albino rabbits were treated with small daily injections of whole horse serum for periods of time ranging from three to 13 months. Unilateral nephrectomy was performed on 20 of the animals at some time during the course of treatment. Diffuse glomerulonephritis was found in 20 of the 31 treated animals. In morphologic appearance the experimentally induced lesions bore an impressive resemblance to the renal lesions of human glomerulonephritis. The renal lesions were progressive in character in that they passed through acute, subacute and chronic

phases, with eventual scarring and atrophy, and with renal failure and urea nitrogen retention progressing to levels which in man are considered uremic.

The most significant result of this experimental procedure was the finding of glomerulonephritis in the absence of other lesions attributable to hypersensitivity. Necrotizing arteritis and cardiac valvulitis, which are frequently seen in rabbits treated with large doses of foreign protein, were not observed under the conditions of this experiment.

KELLEY, V. C., GOOD, R. A. & GLICK, D. (1950.) **Mucolytic enzyme systems. XI. Hyaluronidase inhibitor and serum mucoproteins in patients with lipoid nephrosis and acute glomerulonephritis.**—*J. clin. Invest.* **29.** 1500-1504. [Authors' summary copied *verbatim.*] 3697

The levels of non specific hyaluronidase inhibitor and certain mucoproteins in the serums of patients with lipoid nephrosis and acute glomerulonephritis were studied. Elevations of the mucoproteins and hyaluronidase inhibitor were regularly found during the acute phase of glomerulonephritis with a return to normal levels during convalescence. Elevated values of hyaluronidase inhibitor and depressed values of mucoproteins were found in the serums of patients with active lipoid nephrosis. A return to normal levels signified complete remission of the disease process while persistent evaluation of hyaluronidase inhibitor following diuresis was found when remissions were incomplete.

POISONS AND POISONING

RODIER, J. (1950.) Considerations sur le manganisme au Maroc. **[Manganese poisoning in Morocco.]**—*Maroc. med.* **29.** 817-826. 3698

Twenty-eight cases of nerve degeneration caused by manganese poisoning were diagnosed in workers in Moroccan mines, representing a relatively low incidence in view of the large numbers of workers involved. It is believed probable that a much larger number of cases occur of a subclinical character with suboptimal function but without specific symptoms of manganese poisoning. The clinical picture at various stages of the condition and the associated changes in the blood picture are described.

—H. PAVER.

BENTLEY, H. R., MCDERMOTT, E. E., MORAN, T., PACE, J. & WHITEHEAD, J. K. (1950.) **Action of nitrogen trichloride on certain proteins. I. Isolation and identification of the toxic factor.**—*Proc. roy. Soc.* Ser. B. **137.** 402-407. 3699

The authors discuss the literature dealing with the action of nitrogen trichloride on certain proteins, the formation of a substance toxic to some species and the search which led to the finding that this toxic factor was a derivative of the amino acid methionine. Its molecular and structural formulae have been established and the properties of this substance are discussed. [See also *V.B.* **21.** 102.]

—E.M.J.

MOON, F. E. & RAAFAT, M. A. (1951.) **The experimental production of bracken "poisoning" in sheep.**—*J. comp. Path.* **61.** 88-100. [Authors' summary modified.] 3700

Bracken poisoning has been produced experimentally in sheep by feeding fresh bracken, although it was found difficult to induce sheep to eat adequate quantities of the plant. The apparent absence of natural cases in sheep is probably due to their selective grazing habits. Bracken poisoning in sheep produced the same symptoms and post-mortem findings as in cattle. The poisoning of ruminants fed on bracken appeared to be closely related to the stage of growth, young bracken being most toxic.

Bracken poisoning was also produced in sheep by feeding artificially dried whole bracken, although a greater consumption of dry matter was found to be necessary when this material was used. There were indications that the drying process may reduce the degree of toxicity of the plant. Dried whole bracken crushed to a meal did not show any poisonous effect when fed to sheep at a relatively high level (1·38 kg. per day) for 44 days. Similar bracken meal after extraction with alcohol fed to a sheep for a similar time and in even larger amounts (1·95 kg. per day) had no poisonous effect and was quite palatable.

The live weights of sheep fed entirely on bracken were closely related to the quantities of dry matter consumed. When sufficient bracken (fresh, dried, uncrushed or dried and crushed to a meal) was consumed its nutritive value was clearly demonstrated by the gains made.

See also absts. 3673 (vitamin D intoxication); 3681 (condition simulating Borna disease); 3775 (report, U.S.A.); 3777 (poisons guide).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

HUSZÁK, I. & DOMONKOS, J (1951.) Beiträge zur Pathologie der neuro-allergischen Erkrankungen. III. Die Wirkung von Antihistaminen auf den Sauerstoffverbrauch verschiedener überlebender tierischer Gewebe. IV. Die Wirkung von Histamin und Antihistaminen auf den Oxydationsmechanismus des Zentralnervensystems. **[Pathology of neuro-allergic diseases. III. Effect of antihistamines on the oxygen consumption of animal tissues *in vitro*. IV. Effect of histamine and antihistamines on the oxidation mechanism of the central nervous system.]**—*Acta Allerg.* 4 47-52 & 53-62. [In German. English summaries.] 3701

Four antihistamines in buffered solutions at pH 7·3 were tested on tissues from the horse and cat, and oxygen consumption measured by the Warburg manometer at 37°C. These substances produced marked inhibition of respiration only in the grey matter of the central nervous system, the effect being detectable at M/4000, and an inhibition of 20–30% at M/1000. Only a small inhibition was produced in kidney tissue, while effects were negligible with liver, muscle and white nervous tissue. The action is caused by interference with cytochromes, and is neutralized by small doses of histamine or muscle extracts. The antihistamines exert no effect on cytochrome oxidases, and they probably combine with the iron of the enzyme.—F. R. HARRIS.

SWEET, J. D., MARTIN, S. M., WALLACE, C. N. & ELSASSER, T. H. (1949.) **Clinical observations on the use of pyribenzamine in the cow and horse.**—*Cornell. vet.* 39. 353-369. 3702

Injections of pyribenzamine [N′-(2 pyridyl) N′-benzyl-N, N-dimethyl ethylene diamine] were given to cows and horses affected with various disease conditions in which histamine poisoning was suspected to be an important factor.

In cows and some heifers and calves that were so dosed the results were as follows: Urticaria—very rapid improvement; "summer snuffles"—improvement sometimes followed by relapse; acute pulmonary oedema—recovery in most cases; anaphylactic shock—recovery; acute mastitis—pyribenzamine useful together with penicillin; retained placenta—toxic symptoms were relieved; arthritis following retained placenta, metritis or mastitis—results with sulphonamide treatment improved by simultaneous administration of pyribenzamine; toxic symptoms following penicillin or sulphonamide treatment of secondary pneumonia—recovery after the administration of pyribenzamine; haemorrhagic septicaemia—pyribenzamine following sulphonamides gave relief to some of the animals but some died; transport tetany—recovery; "fresh cow dysentery"—recovery; "winter dysentery"—no improvement; gangrenous vulvitis and vaginitis—slight improvement at first but all died; parturient paresis—the pyribenzamine reinforced calcium therapy; acetonaemia—contradictory results; coccidiosis—recovery; white scours—pyribenzamine may be of value after other treatment; overloaded rumen—toxic symptoms were improved.

In horses the results were: a dermatitis of unknown aetiology—improvement; purpura haemorrhagica—no value; lymphangitis—recovery which may have been independent of pyribenzamine; pulmonary emphysema—some temporary relief; severe bee stings—recovery; myohaemoglobinaemia paralytica—contradictory results; laminitis—transitory improvement; periodic ophthalmia—improvement.

—R. MARSHALL.

JAMESON, J. E. (1949.) **An antibiotic from *Pfeifferella whitmori*.**—*J. Hyg., Camb.* 47. 142-145. 3703

Growth experiments were carried out on six media. The maximum titre was on the sixth day at 37°C. The antibiotic withstood 100°C. for a few min., but not for 30 min. It can be Seitz filtered or heated for 10 min. at 72°C. for use and keeps indefinitely in the refrigerator. It is active *in vitro*, in Dubos' medium, against *Mycobacterium tuberculosis* H37Rv, but otherwise resembles penicillin and was active against experimental *Corynebacterium diphtheriae mitis*.—MALCOLM WOODBINE.

JONES, E. W. (1950.) **A review of and observations upon general anaesthetics used in the horse.**—*Thesis. Cornell.* pp.170. 3704

A careful study of the anesthetics used in equine surgery and their relative value. The author believes that all but minor surgery should be performed with the aid of an experienced anesthetist. No one anesthetic is best. A combination is usually advantageous, the one supplementing the other. If induction is to be achieved with the minimum of restraint and greatest of ease, intravenous administration is the method of choice. If the plane of anesthesia is to be varied rapidly and recovery is to take place quickly, a volatile anesthetic is prefer-

able. An enhanced knowledge and improved technique in administration to large animals will do as much if not more than the advent of some new anesthetic to diminish the hazards commonly associated with equine anesthesia.
—H. L. GILMAN.

TEUNISSEN, G. H. B. (1951.) Thoraxchirurgie bij het kleine huisdier. **[Surgery of the thorax in small animals.]**—*Tijdschr. Diergeneesk.* 76. 17-23. 3705

Modern thoracic surgery with controlled respiration has been applied to dogs and cats for the treatment of diaphragmatic hernia and of foreign bodies in the thoracic part of the oesophagus. In the dog and the cat the mediastinum is incomplete, and the lungs collapse when the thorax is opened. Oxygen is therefore pumped into the lungs *via* a tube in the trachea. Active respiration ceases through lack of CO_2 which is an advantage in performing the operation. Curare is administered when the respiratory movement is not sufficiently paralysed.

Details are given of anaesthesia employed and of the technique of the surgical operations performed.—C. A. VAN DORSSEN.

DELAUNEY, A., FOUCQUIER, E. & LEBRUN, J. (1950.) Sur l'adrénaline, hormone anti-inflammatoire. **[Anti-inflammation hormone action of adrenalin.]**—*C.R. Acad. Sci., Paris.* 230. 1910-1911. 3706

Adrenalin is an anti-inflammation hormone which attenuates or suppresses vaso-dilation, capillary permeability, and diapedesis—the three main vascular manifestations of inflammation.—W. R. BETT.

ITKIN, B. Z. (1949.) **[Healing wounds with "trephoned" serum.]**—*Veterinariya, Moscow.* 26. No. 9. pp. 38-41. 3707

The author discussed the formation by leucocytes of a healing substance referred to as "leucocytic trephones" by the author, the serum in which leucocytes were cultured being termed "trephoned serum". It was claimed that this serum was therapeutic when applied locally to any diseased tissue and for any lesions however caused; application of a 24-hour culture greatly stimulated histological processes and a 72-hour culture effectively aided tissue regeneration.

Sixty wounds were inflicted on dogs, half of which were treated with the "trephoned" serum and the other half, symmetrically positioned on the same animals, by either rivanol, iodo-ether or "autoserum". The experimental lesions healed in 17–22 days, average 20·9 days, no micro-organisms being found during the healing process; the control lesions in 25–33 days, average 28·6 days. Clinical pictures and histological processes were described. Thereafter "trephoned serum" tratment was given with good results to 23 animals, including horses, with accidental external damage to various parts of the body.—F.A.A.

See also absts. **3461** ("tween 80"); **3478** (polymyxin); **3484** (sulphonamides in fowl typhoid); **3494** (treatment of brucellosis in pigs with streptomycin and sulphadiazine); **3526-3528** (sulphonamides in fowl coccidiosis) **3529** (nitrofurazone in fowl coccidiosis); **3534** (East Coast fever); **3535** (anaplasmosis); **3536** (eperythrozoonosis); **3551** (*p*-benzoquinone and influenza virus); **3554** (cortisone in Coxsackie virus infection of mice); **3598** (sulphonamides in quail ulcerative enteritis); **3604** (aureomycin in Q fever); **3605** (resistance of *R. burneti*); **3609** ("salmon poisoning" in dogs); **3614** (A.C.T.H. and cortisone); **3627** (D.D.T. and B.H.C.); **3630** (D.D.T. resistant house-flies); **3632** (tick poison); **3634** (effect of dyes on liver flukes); **3636** (anthelmintic); **3639** and **3642** (phenothiazine); **3674** (vitamin B, treatment of paralytic myohaemoglobinuria); **3692-3693** (surface-active agents); **3710** (action of calciferol and oestradiol on bone); **3735** (effect of antibiotics on bull semen); **3736** (toxicity of antibiotics to bull speratozoa); **3777** (poisons guide); **3778** (book, anaesthesia).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

AOKI, T. & WADA, M. (1951.) **Functional activity of the sweat glands in the hairy skin of the dog.**—*Science.* 114. 123-124. 3708

Sweat glands are present in the skin of dogs not only in the foot pads but also over the body surface. It has frequently been stated that only the sweat glands of the foot pads are functional in dogs. Using the technique of dusting the shaved skin with an iodine starch powder the authors demonstrated that local sweating did occur from the sweat glands in the skin of the body surfaces when dogs were exposed to excessive temperatures (30°–35°C) in closed chambers or when pilocarpine, acetylcholine, or adrenalin were injected intradermally in very dilute solutions ($1:10^3 - 1:10^5$). No spontaneous sweating was observed even during violent struggling.

The authors suggest that the sweat glands of the body skin of dogs do not participate in the central heat regulating mechanism but subserve chiefly the protection of the skin from an excessive rise of temperature.

Sweating could also be induced in excised portions of skin by exposure to radiant heat.

Histological studies, not described in this article, are stated to have furnished evidence of secretory activity under the influence of sudorific drugs and radiant heat.

In man local sweating can be caused by application of nicotine intradermally, but in dogs this response was not obtained.—M.C.

HAUCK, E. (1949.) Die Hautdicke des Hundes. **[The thickness of the skin of dogs.]**—*Wien. tierärztl. Mschr.* **36.** 670-674. 3709

The thickness of the skin in various parts of the body of 29 breeds of dog was compared. —C.M.S.

BARNICOT, N. A. (1951.) **The local action of calciferol and oestradiol on bone.**—*J. Anat.* **85.** 120-134. [Author's summary copied *verbatim.*] 3710

Calciferol in the form of small pellets was attached to pieces of parietal bone from 10-day-old mice and grafted intracerebrally to litter mate animals. After 14 days a diffuse resorption of bone, often leading to perforation, was observed. This effect was not obtained with ergosterol or cholesterol.

It was shown by histological sectioning that this resorption was accompanied by osteoclasts, but these cells were less conspicuous in specimens stained supravitally with neutral red than they were in grafts of vitamin A. A certain amount of new bone formation also occurred at the site of resorption.

The resorption was more intense if the calciferol was in finely divided form. Differences between two strains of mice in the degree of response were noted, and some evidence was found that irradiation of the calciferol in ultraviolet light increased the resorption it produced.

Similar experiments were performed with oestradiol, using both pieces of parietal bone and also portions of the femoral shaft. No local action of the oestrogen could be demonstrated.

WARBURG, O. [Translated by: LAWSON, A.] (1949.) **Heavy metal prosthetic groups and enzyme action.** pp. xii+230. Oxford: Clarendon Press. 18s. 3711

The author critically surveys the study of respiration of the cell and the fate of the molecular oxygen which is absorbed by the respiring cell. He deals with the experimental work of Davy (1820) who with his discovery of the oxidizing action of finely divided platinum created the first model for cell respiration, and with other valuable contributions by Claude Bernard (1857), Mac Munn (1885), and John Haldane (1896). With the discovery of three other important stages in 1923, 1926 and 1928 an explanation was found in that it is the autoxidizable ferrous iron complex which is oxidized to ferric iron by molecular oxygen and transformed again to ferrous iron by the reducing action of the cell constituents.

He also deals with the oxygen transporting copper complex of the phenol oxidases, the hydrogen producing iron catalyst of the butyric acid bacteria, the heavy metal of yeast zymohexase discovered in 1942 and finally, the heavy metal of the chloroplasts and its function in the photo-reactions discovered in 1944. The last chapter does not deal with heavy metals, but is a report on the quantum requirement of carbon dioxide assimilation, experimental work concluded at the Kaiser-Wilhelm-Institut für Zellphysiologie in 1945.

The book which is well bound and printed is a welcome addition to the library of those interested in biochemistry.—E.M.J.

MITHOEFER, J. & RAPOPORT, C. (1951.) **Serum alkaline phosphatase in dogs following ligation of the hepatic veins.**—*J. Lab. clin. Med.* **37.** 520-525. [Abst. from authors' summary.] 3712

After ligation of tributaries of the hepatic vein of dogs, there was an increase in the serum alkaline phosphatase. No evidence of bilirubinemia or of impaired excretory function of the liver was found. There was no abrupt change in the phosphatase activity of the serum after excision of the lobes drained by the ligated veins. There was no apparent difference in the phosphatase content of the various parts of the liver. There was no regeneration of the hepatic parenchyma. It is concluded that when the hepatic veins are ligated the function of the entire liver is altered so as to produce an increase in the serum alkaline phosphatase activity. There is indirect evidence that such increase is caused by oversecretion of the enzyme by hepatic substance, rather than failure of the liver to excrete the phosphatase delivered to it.

SIFFERT, R. S. (1951.) **The role of alkaline phosphatase in osteogenesis.**—*J. exp. Med.* **93.** 415-425. [Author's summary copied *verbatim.*] 3713

The role of alkaline phosphatase in osteogenesis has been investigated by histochemical techniques with particular attention to its relationship to phosphate metabolism and matrix elaboration. The upper tibial epiphysis mainly, and other epiphyses as well of growing rabbits, and the costochondral junctions of newborn human beings were studied as were bone grafts in growing rabbits. The findings in the newborn human beings were identical with those in the rabbits.

Phosphatase activity and free phosphate localization do not universally coincide. The enzyme appears to be intimately related to preosseous cellular metabolism and to be the elaboration of a bone matrix that is chemically

calcifiable. It remains possible, however, that phosphatase may be in some way involved in making inorganic salts available to the calcifiable matrix. If this function does exist it is a secondary one, since the elaboration of bone matrix, which is always associated with phosphatase activity, can and does occur in the absence of calcification. Calcification may occur later, in the absence of the enzyme.

There is evidence to suggest that cartilage matrix is utilized in the formation of bone matrix.

Phosphatase is physiologically active only in the presence of living cells. Where it is demonstrable in the absence of living cells, as in the cartilage remnants of the metaphysis, it appears to be physiologically inactive. Since phosphatase is temporarily inactivated in weakly acid media, and readily reactivated by alkaline solutions it is possible that the enzyme might survive in a physiologically inactive state in weakly acid tissues, and yet remain capable of histochemical demonstration *in vitro* in an alkaline medium.

Phosphatase is not related to the disappearance of chondroitin sulfate.

SHERRY, S. & GOELLEA, J. P. (1950.) **The extent of the enzymatic degradation of desoxyribonucleic acid (DNA) in purulent exudates by streptodornase.**—*J. clin. Invest.* **29.** 1588-1594. [Authors' summary copied *verbatim.*] 3714

Biochemical studies, employing paper chromatography and ultraviolet absorption spectra have been made of the extent of degradation of DNA by streptodornase. DNA is extensively split by streptodornase, with the liberation of free purine bases (adenine and guanine), and pyrimidine desoxynucleosides (cytidine and thymidine). It is concluded that streptodornase consists of several nucleolytic enzymes rather than a single enzyme. In purulent exudates, the enzymatic action of streptodornase on DNA is enhanced and modified by the nucleotidases, nucleosidases, and deaminases which may be present in the exudate itself.

MCCANCE, R. A. & WIDDOWSON, E. M. (1951.) **Composition and function of colostrum and 'regression' milk.** [Correspondence.]—*Nature, Lond.* **167.** 722. 3715

Comparable values for protein and acid and alkaline phosphatase in the colostrum and 'regression' milk of women and bitches were recorded, and the higher concentration of 'regression' milk and functional aspects were considered.—JOHN SEAMER.

KAPLAN, E. & ZUELZER, W. W. (1950.) **Erythrocyte survival studies in childhood. I. Methods and general observations.**—*J. Lab. clin. Med.* **36.** 511-516. [Authors' summary copied *verbatim.*] 3716

Erythrocyte survival studies, using the method of differential hemagglutination on capillary blood samples, are easily performed in infants and children. Withdrawal of blood for survival study from children with a variety of hematologic disorders is not attended by any distress or untoward sequelae for the patient when immediate replacement is made as indicated.

Subjects of small size are particularly suitable as recipients of tagged erythrocytes since small transfusions yield relatively high donor cell counts. The results obtained with normal subjects and with subjects with sickle cell anemia and congenital hemolytic icterus conform to those of previous workers and form the basis for the interpretation of original observations in a variety of hemolytic disorders in childhood.

STERLING, K. & GRAY, S. J. (1950.) **Determination of the circulating red cell volume in man by radioactive chromium.**—*J. clin. Invest.* **29.** 1614-1619. [Authors' summary slightly modified.] 3717

A new biological tracer, radioactive chromium (Cr^{51}) with a half-life of 26·5 days, has been employed for the determination of the circulating red cell volume in man. A small aliquot of the subject's erythrocytes was tagged rapidly *in vitro* with radioactive sodium chromate and was re-injected within a few hours. After the tagged cells had mixed in the circulation the radioactivity of the subject's erythrocytes was determined. The circulating red cell volume was calculated by the isotope dilution principle. The radioactivity of the circulating red blood cells remained constant for approximately 24 hours without significant loss to the plasma. Repeated measurement of the red cell volume was reproducible within 5% for approximately 24 hours. The accuracy of the method was within 5% and was verified by hemorrhage and transfusion experiments with measured volumes of blood. The circulating red cell volumes of 25 normal male medical students were determined: the mean circulating red cell volume was 2351 cc., the mean red cell volume per kilogram body weight was 31·8 cc., the mean red cell volume per square meter surface area was 1·21 liters.

SELLERS, A. F. & HEMINGWAY, A. (1951.) **Direct measurement of arterial and venous**

pressures in cattle using the electromanometer. —*Amer. J. vet. Res.* **12.** 90-96. [Part of authors' summary copied *verbatim.*] 3718

Application of electromanometric measurement to arterial and venous pressures in dairy cattle is described.

Cannulation of the common carotid artery at right angles to its long axis with 16-gauge, 3-in. needles appeared to give reasonably satisfactory pressure registration. Topographic differences in upstream/downstream bevel position records did not appear to involve the basic contour of the pulse wave.

Tracings typical of normal carotid and jugular pulse curves in dairy cattle are presented and discussed.

KERBY, G. P. & MARTIN, S. P. (1951.) **The splanchnic removal of bacteria from the blood stream of leukopenic rabbits.**—*J. exp. Med.* **93.** 189-195. [Authors' summary slightly modified.] 3719

In rabbits subjected to profound damage of the blood-forming tissues by the use of benzene and mechlorethamine hydrochloride, no impairment of efficiency in the splanchnic removal of *Micrococcus* [*Staph.*] *aureus* from the blood stream could be demonstrated by a method involving catheterization of the hepatic vein.

All evidence continues to indicate that a bacteraemia cannot be maintained unless the organisms are introduced constantly into the blood stream from some source.

The importance of the leucocyte in the establishment and clearing of the bacteraemias appears to lie in its phagocytic activities at the local source of the bacteraemia rather than in any quantitatively significant phagocytosis of organisms circulating in the blood stream.

The present studies suggest that in the study of the leucopenic state attention should be directed more especially toward the identification and eradication of the local source of organisms.

LATIMER, H. B. & CORDER, R. L. (1948.) **The growth of the digestive system in the fetal dog.**—*Growth.* **12.** 285-309. 3720

In a study of the development of the digestive system in 140 foetal and new-born puppies, the increase in weight of the digestive tube, liver and pancreas was compared with the body weight and body length. It was found that the digestive tube and liver grow at a constant rate throughout foetal life and that the digestive tube remains constant at an average of 10·35% of the body length. Curves were developed which enable either the weight in grammes or the percentage of the body weight of each organ to be calculated, when either the body weight or the body length is known.—J. A. NICHOLSON.

WOODS, A. C., JR., PROCTOR, D. F., ISAACS, J. P. & CARTER, B. N. (1951.) **Studies in respiratory air flow. III. The mechanics of respiration in the dog as reflected by changes in intraperitoneal pressure.**—*Johns Hopk. Hosp. Bull.* **88.** 291-303. [Authors' summary and conclusions slightly modified.] 3721

Fluctuations in intraperitoneal pressures observed in anaesthetized dogs ranged from one to two cm. of water pressure in contrast to intrapleural pressures which ranged from 12 to 20 cm. of water pressure.

The intraperitoneal pressure in most normal dogs showed two peaks in the negative direction: an early negative peak attributed to intercostal contraction at the onset of inspiration, a positive pressure peak as the diaphragm contracted and descended, reducing the volume of the abdominal cavity, and a final negative peak as expiration ensued.

Intraperitoneal pressure, and apparently the pneumotachogram, reflected the dynamically changing balance between intercostal and diaphragmatic activity. Contraction of the intercostals lowered intraperitoneal pressure and diaphragmatic contraction raised it.

The intercostal muscles and the diaphragm did not act together in inspiration and in the time sense. Evidence has been presented which indicates that the early peak flow in inspiration is due to the action of the intercostals and late peak flow is due to the action of the diaphragm.

FULTON, J. F. [O.B.E., M.D., D.Sc., L.L.D. Sterling Professor of Physiology, Yale University.] (1949.) **Physiology of the nervous system.** pp.x+667. New York: Oxford University Press. London: Oxford University Press. 3rd revised Edit. 75s. 3722

This edition, published six years after the second edition, has required extensive revision and rewriting in order to accommodate the very great advances in knowledge of the physiology of the nervous system which have accumulated during the last few years. The layout of the book and the form of the illustrations follow the pattern of previous editions, a notable feature being the brief but masterly summary at the end of each chapter. All relevant literature is listed in an extensive up-to-date bibliography.

Recent work, both experimental and clinical, of any significance on any aspect of neurophysiology has been woven into the text and

considered by the author in his discussion of neural function and integration. Emphasis is laid on the important new discoveries made in the examination of cerebral and cerebellar function. Recent findings on the inter-relationship between the suppressor areas of the cerebral cortex, the anterior lobe of the cerebellum and the brain-stem facilitatory and inhibitory areas are reviewed. The importance of cortical areas controlling autonomic function is integrated with the action of more caudal sub-cortical areas known to exert neural control of autonomic systems. The importance of functional localization in the prefrontal lobes and the significance of frontal lobotomy of the primate brain are expounded.

Although the theme of the book is directed in particular to those interested in clinical medicine, it also provides a wealth of material gathered from the study of sub-primate species. The final chapter, attributed to Dr. H. S. Liddell, discusses the nervous system as a whole utilizing the conditioned reflex to illustrate the close association of physiology with psychology and mechanisms of behaviour.—F. R. Bell.

Mohiuddin, A. (1951.) **The post-natal development of the inferior dental nerve of the cat.**—*J. Anat.* **85.** 24-35. [Author's summary copied *verbatim.*] 3723

An investigation of the development of the inferior dental nerve of the cat from birth to maturity was made in order to observe the reaction of the stem fibres in the nerve trunk to the changes in the field of terminal distribution resulting from the loss of the milk teeth. The average number of axons in fully grown cats was found to be 5679. About 11% of these were unmyelinated. The number of axons does not increase during post-natal growth. It remains unaffected by the loss of milk teeth. The average number of myelin sheaths at birth is 3028. This increases by 67% to 5051 in the fully grown animals. The increase in the number of myelin sheaths occurs most rapidly during the first 10 days after birth, and it is probably completed by the end of the second month.

Loss of milk teeth does not affect the number of myelin sheaths.

The calibre spectrum of the myelinated fibres in fully grown cats is bimodal, one mode being at about 4μ and the other at about 10μ. The total range is from 2 to $17{\cdot}5\mu$.

In the newborn kitten almost all the myelinated fibres are between 2 and 5μ in diameter and the calibre spectrum is unimodal.

Growth in fibre size is gradual, and is completed in 5 months, although the bimodal character of the spectrum is evident by 3 months. The loss of the deciduous teeth does not affect the calibre spectrum.

Dalton, A. J., Kahler, H., Striebich, M. J. & Lloyd, B. (1950.) **Finer structure of hepatic, intestinal and renal cells of the mouse as revealed by the electron microscope.**—*J. nat. Cancer Inst.* **11.** 439-461. [Abst. from authors' summary.] 3724

A series of fixatives was tested for their suitability in studies with the electron microscope, using the hepatic cell of the mouse as a test object. The majority of the fixatives tested were unsatisfactory but a combination of osmic acid, lanthanum sulphate and potassium bichromate gave satisfactory preservation of both cytoplasmic and nuclear detail. Structure of hepatic, hepatoma, intestinal and kidney cells as revealed in electron micrographs was described.

Lippman, R. W., Ureen, H. J. & Oliver, J. (1951.) **Mechanism of proteinuria. III. A comparison of the functional and structural aspects of the effects of certain intraperitoneally administered proteins on hemoglobin excretion in the rat.**—*J. exp. Med.* **93.** 325-336. [Authors' summary copied *verbatim.*] 3725

Intraperitoneal administration of bovine albumin sharply increases glomerular permeability to hemoglobin in the rat kidney. In addition, bovine albumin "saturates" the tubular absorption mechanism and inhibits the tubular absorption of subsequently administered hemoglobin. Egg white, ovalbumin, and ovomucoid, in contrast, do not produce significant changes in glomerular permeability to hemoglobin or in the tubular absorption of hemoglobin. These effects have been demonstrated both by physiologic measurements and by the morphologic demonstration of the absorbed proteins.

Borison, H. L. & Brizzee, K. R. (1951.) **Morphology of emetic chemoreceptor trigger zone in cat medulla oblongata.**—*Proc. Soc. exp. Biol., N.Y.* **77.** 38-42. [Authors' summary copied *verbatim.*] 3726

A hitherto unidentified structure in the medulla oblongata is described. It is an essentially non-neural zone situated between the ala cinerea and the vestibular complex and is contiguous medially with the area postrema which overlies the ala cinerea. The zone consists largely of fibroblasts and cells resembling protoplasmic astrocytes and astroblasts which

have an abundance of vascular feet abutting on a dense network of blood vessels. Numerous nerve endings found in this zone are observed to connect with a loose fiber bundle which passes towards the nucleus of the fasciculus solitarius. Experimental studies made with the ablation technic have yielded evidence that this structure is the anatomical framework of the medullary chemoreceptor trigger mechanism for the emetic center. Destruction of this chemoreceptor trigger zone in cats makes the animals refractory to the emetic effect of the intravenously administered cardiac glycosides —lanatoside C, scillaren A and ouabain—in doses which are known to be effective in intact animals.

SCOTT, J. H. (1951.) **The development of joints concerned with early jaw movements in the sheep.**—*J. Anat.* **85.** 36-43. [Author's summary slightly modified.] 3727

The temporo-mandibular and middle ear regions of foetal sheep from 29 to 150 mm. in length (36–70 days gestation) have been examined in serial sections.

Up to about the 37th day (30 mm.) there is no joint cavity between the malleus and the incus and there is no evidence of any opening or closing of the mouth. Between the 38th and the 40th day (34–38 mm.) the joint cavity between the malleus and incus commences to form, but there is no evidence whatever of a mandibular joint. The muscles of mastication include the tensor tympani of the middle ear. This is the time at which opening and closing of the jaws begins.

The first indication of a joint cavity and articular disc at the mandibular joint is found about the 47th day of gestation and these structures are well formed by the 50th day. At this time, however, Meckel's cartilage is still a continuous bar stretching from the malleus to the mental symphysis, so that jaw movements involve two joints, the incudo-malleolar and mandibular joints.

Meckel's cartilage commences to break its continuity with the anterior process of the malleus to the inner side of the mandibular joint at about the 60th day of gestation. Calcification commences in the crowns of the teeth at the same time, and ossification of the ear ossicle commences soon after (in the 150 mm. foetus).

See also absts. **3682** (ruminal digestion); **3740** (oestrogen-induced lactation); **3754** (teething in Brazilian cattle); **3779** (factors regulating blood pressure); **3780** (textbook, endocrinology); **3781** (book, biochemistry of nucleic acids).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

MUNCH-PETERSEN, S. (1950.) **On the copper content of milk fresh from the cow, in bottled whole milk and in other milk products.**—*Nord. Vet.-Med.* **2.** 697-706. [In English. Abst. from author's summary.] 3728

Fresh cow's milk contains $5{\cdot}5 \pm 0{\cdot}5 \mu$g.% copper. Variations cannot be demonstrated in the copper content of the milk in relation to grazing or stall-feeding or time of milking. Bottled whole milk was found to have a higher copper concentration than fresh cow's milk. Slightly higher values were found in bottled cream, skim-milk and buttermilk. Higher values were observed in butter (and margarine). In samples of cheese the copper concentration was very variable.

COCKRILL, W. R. (1951.) **Antarctic pelagic whaling: the rôle of the veterinary surgeon in the whaling industry, with special reference to standards of inspection in the production of whalemeat for human consumption, and some notes on the pathology of the Baleen whales.**—*Vet. Rec.* **63.** 111-125. 3729

An interesting account of the whaling season 1948-49 of a whaling factory vessel and its attendant fleet. The Sperm whale season opens on Dec. 1st, and these whales are hunted for their oil only as the meat is too black to be saleable. Baleen whales are hunted from 15th Dec. Of these, the Blue whale provides most meat, the Fin whale next, while the Sei and Minke are hardly worth hunting and the Humpback is nearing extinction and is rigorously protected. The parts of the meat taken for human consumption are the psoas and longissimus dorsi muscles. As it is impossible to remove these under hygienic conditions, the outer half inch is cut away. Grade A is meat taken from the carcass during or before rigor mortis and Grade M when rigor is passing. This grading was a major duty of the veterinary inspector. Care had also to be taken to remove meat damaged by harpoons, or in an early stage of putrefaction. Diseased meat was rare. Only one carcass, a Fin, was totally condemned for disease, for an extensive vertebral abscess and chronic peritonitis. Some carcasses had numerous small caseated lesions similar to those of caseous lymphadenitis and believed to be due to parasites. Intestinal parasites are common, but no others.—R. MACGREGOR.

ARIFDZHANOV, K. A. (1950.) **[Twenty-five years of the Uzbekestan veterinary research institute.]**—*Veterinariya, Moscow.* 27. No. 3. pp. 59-60. 3730

This veterinary institute was the first to be founded among the Central Asiatic Republics. No veterinary services existed there before and the immediate aims of the institute were the study of the veterinary problems of the region and the manufacture of the necessary products for the control of certain diseases. Special study was made of the local geographical distribution of protozoa and helminths and methods of counteracting them; effect of water supplies; plant poisoning; use of the Siberian marmot as a test animal in brucellosis; the diseases and rearing of Karakul sheep; "suilyuk" [equine myoglobinuria paralytica], trypanosomiasis, leptospirosis and other diseases. The institute also trains veterinary personnel, gives extra-mural lectures, issues brochures and has published 12 volumes of transactions.—F.A.A.

See also absts. **3485** (*Salmonella* infection from pork); **3491** (*Brucella* ring test); **3603** (milk in transmission of disease); **3765** (basic abattoir project).

LIVESTOCK HYGIENE

PRAMER, D. & HEUKELEKIAN, H. (1950.) **Survival of tubercle bacilli in sewage-treatment processes.**—*Sewage & Industr. Wastes.* 22. 1123-1125. [Abst. in *Brit. Absts.* B. 111. p. 108 of absts., copied *verbatim.*] 3731

A method is described whereby growth of organisms normally found in sewage is suppressed without significantly inhibiting growth of tubercle bacilli; it involves preheating for 30 min. at 50° and plating on Dubos agar medium modified by adding 5 units of penicillin and 50 units of grisein per ml. Application of this procedure was made to sewage inoculated with avian tubercle bacilli to determine the survival of these bacilli in some sewage-treatment processes. Chemical coagulation with $FeCl_3$, sand filtration, and chlorination (0·9 p.p.m. of free Cl_2 residual) each gave more than 99% removal of tubercle bacilli. It is concluded that a combination of these three processes would give an effluent free from virulent tuberculosis organisms.

VILLARES, J. B. & DA ROCHA, G. L. (1950.) Climatologia zootécnica. X — Contribuição para o estudo dos hábitos dos bovinos nas pastagens tropicais. **[The behaviour of cattle on tropical pastures.]**—*Bol. Industr. anim., S. Paulo.* 11. 3-22. [English summary.] 3732

A detailed account of the grazing habits of steers in tropical grassland. In the autumn when the pastures were at their best, 8·56 hours per day were spent in grazing, but in the spring when the pastures were poor, 11·58 hours were spent; owing it is suggested, to more time being taken in selecting nutritive grasses. Although individual animals varied the time appreciably, there was no significant variation in the grazing times of breeds as a whole; pure bred Brahmin zebus lost 7% weight in the spring; Caracu × Brahmin crosses lost 6·7%; pure Caracu 14% and Caracu × European 17·4%. Salt was taken more frequently in the autumn than the spring, but water was drunk more frequently in the spring. Heavy dews, especially in the spring, materially reduced the grazing times.

—R. MACGREGOR.

REPRODUCTION AND REPRODUCTIVE DISORDERS

DYRENDAHL, I. (1948.) Iakttagelser i a.i-arbetet rörande fosterresorption och tidiga aborter. **[Resorption of the foetus and early abortions in artificial insemination work.]**—*Svensk VetTidskr.* 53. 154-160. [Abst. from English summary.] 3733

In material from 2,450 animals on which manual pregnancy examination was made (usually 6–7 weeks after the last artificial insemination) with a positive result, 2,345 calved and 83 aborted; in 19 cases the foetus disappeared 7–33 days after the pregnancy examination. This is accounted for as resorption of the foetus, and circumstantial evidence is given to support this theory.

MADDEN, F. W., HERMAN, H. A. & BEROUSEK, E. R. (1947.) **The relationship between percentage of live spermatozoa and motility, longevity, and fertility of semen of dairy bulls.**—*Res. Bull. Mo agric. Exp. Sta.* No. 407. pp. 3-15. 3734

These studies were made over a period of 12 months on 305 semen collections from 13 bulls. The percentage of live spermatozoa was determined by the opal blue-eosin differential

staining method of Fasley *et al.* Motility ratings were made immediately after collection on the scale 0 to 5 and longevity was the length of time before a sample dropped to a motility rate of 2.

There was a significant correlation between initial motility and initial percentage of live spermatozoa and also between longevity and initial percentage of live spermatozoa. No significant differences were noted between motility, longevity and initial percentage of live spermatozoa of semen which produced conception and similar values for semen which did not produce conception.—E. J. H. Ford.

Myers, R. M. & Almquist, J. O. (1951.) **A comparison of the effects of aureomycin, penicillin and streptomycin upon spermatozoan livability and control of bacteria in bovine semen.**—*J. Anim. Sci.* **10.** 322-330 [Parts of authors' summary copied *verbatim.*] 3735

Concentrations of 12·5 and 25 μg. per ml. of aureomycin did not affect the motility of spermatozoa but higher levels were toxic. The 50 μg. per ml. level was toxic during the last half of the 14-day storage period. In the main experiment involving 24 semen samples, levels of aureomycin ranging from 50 to 1,000 μg. per ml. of diluted semen brought about highly significant decreases in spermatozoan livability during 14 days of storage.

Penicillin, streptomycin and penicillin plus streptomycin were much less spermicidal than aureomycin. A concentration of aureomycin of 1,000 μg. per ml. was highly significantly more toxic to the spermatozoa than either 1,000 units of penicillin per ml., 1,000 μg. of streptomycin or a combination of 1,000 units of penicillin plus 1,000 μg. of streptomycin per ml. of diluted semen. Aureomycin compared favorably with the other antibiotics for the control of bacteria in diluted semen. Levels of from 100 to 1,000 μg. per ml. were about equally effective to the above mentioned amounts of penicillin and/or streptomycin.

Sykes, J. G. & Mixner, J. P. (1951.) **Toxicity to bull spermatozoa of various salts, brands and lots of penicillin, streptomycin, aureomycin and chloromycetin.**—*J. Dairy Sci.* **34.** 342-346. [Authors' summary copied *verbatim.*] 3736

A limited survey was made of the toxicity to bull spermatozoa of several antibiotics including four brands and two salts of penicillin, three brands and three salts of streptomycin, one lot of dihydrostreptomycin, two salts of aureomycin and one lot of chloromycetin. Differences in spermatozoa motility were not attributed to brands, lots or salts of either penicillin or streptomycin. Dihydrostreptomycin sulfate was not toxic to spermatozoa at levels as high as 8 mg. per milliliter of diluted semen. The initial toxic level of aureomycin was found to be above 0·0625 mg. per milliliter while that of chloromycetin was found to be above 0·5 mg. per milliliter of diluted semen.

Porter, J. C., Shankman, S. & Melampy, R. M. (1951.) **Chemical composition of bovine spermatozoa.**—*Proc. Soc. exp. Biol., N.Y.* **77.** 53-56. [Authors' summary copied *verbatim.*] 3737

The chemical composition of bovine spermatozoa has been determined. Data are presented including total N, total lipid, ash, and total phosphorus. Seventeen amino acids were determined by microbiological assays.

Cowie, A. T. (1951.) **Pregnancy tests.**—*Vet. Rec.* **63.** 371-373. 3738

A short general account of the pregnancy tests at present employed is given. It is concluded that only in the case of the mare are there established tests available.

—J. A. Nicholson.

Lombard, L., Morgan, B. B. & McNutt, S. H. (1950.) **The morphology of the oviduct of virgin heifers in relation to the estrous cycle.**—*J. Morphol.* **86.** 1-23. [Authors' summary copied *verbatim.*] 3739

The morphology of the oviduct was studied in 33 clinically normal virgin heifers slaughtered throughout the estrous cycle. The oviduct consisted of three parts: isthmus, ampulla and infundibulum while the wall was composed of three layers: tunica mucosa, muscularis and serosa. The various regions of the oviduct had distinct characteristics primarily in the number of mucosal folds. The mucosal ciliated epithelium was pseudostratified columnar throughout the length of the oviduct. Three types of cells were seen in the epithelium: ciliated columnar cells, peg or intercalary cells and spherical cells.

Complete cellular changes in relation to the estrous cycle were studied. The presence of edema and granules in the epithelial cells was most pronounced from one day proestrus to two days postestrus. Mucus-like material from the oviduct was more abundant during three to 4 days postestrus while cytoplasmic projections of the epithelial cells occurred during proestrus. The height of the epithelium during proestrus was 32·6μ, estrus 45·3μ, one to 5 days proestrus 43·8μ and 26·6μ during 6–15 days postestrus.

SZUMOWSKI, P. & LANGLOIS, B. (1949) Déclenchement expérimental de la lactation chez des génisses par implantation sous-cutanée de petites quantités d'oestrogènes synthétiques. **[Lactation in heifers induced by implantation of oestrogens.]**—*Rec. Méd. vét.* **125.** 401-420. 3740

An experiment was carried out on two virgin heifers to determine the general effects, and the effects on the mammary gland, of implanting relatively small doses (600 mg.) of stilboestrol dipropionate.

The clinical changes in the udder, and the changes in physical character and composition of the milk are described. Both heifers were anoestrus during the experiment, and in one there were slight relaxation of the pelvic ligaments and raising of the sacrum.

—A. G. SINGLETON.

BRIGATTI, C. (1950.) Indagini sull'uso degli estrogeni sintetici e naturali nelle bovine. Risultati practici conseguiti nei casi di sospensione dei calori. **[The use of synthetic and natural oestrogens in cows. Practical results.]** —*Zootec. Vet., Milan.* **5.** 269-282. [Abst. from English summary.] 3741

Of 146 cows with anaphrodisia resulting from ovarian inactivity and from persistent corpora lutea 69 were treated with synthetic and 77 with natural oestrogens. In 57 of the 69 cows subsequent insemination was successful. Of the 77 cows treated with natural oestrogen 66 became pregnant after insemination. Eight cows treated with synthetic oestrogens developed ovarian cysts. Application of synthetic oestrogens is advocated after initial treatment with natural products.

HANSEL, W. & ASDELL, S. A. (1951.) **The effects of estrogen and progesterone on the arterial system of the cow.**—*J. Dairy Sci.* **34.** 37-44. [Abst. from authors' summary.] 3742

A study of the uterine arteries of six normal and seven ovariectomized cows by the plastic injection-corrosion technique revealed that: The caruncular arterioles of normal cows are extremely coiled. The endometrial arterioles of 13- to 16-month-old heifers are essentially straight, while similar arterioles in the uteri of mature cows are more numerous and more highly coiled, the lower conception rate in heifers and the more frequent occurrence of metoestrous bleeding in heifers probably resulting from these factors. The disappearance of the endometrial arterioles that normally occurs following ovariectomy can be prevented by administration of the ovarian hormones. Oestrogenic hormones appear to be the most effective in this respect. It was not possible by this method to detect differences in the arterial development of the uteri of normal cows which might be associated with definite stages of the oestrous cycle.

DOHAN, F. C., RICHARDSON, E. M., STRIBLEY, R. C. & GYORGY, P. (1951.) **The estrogenic effects of extracts of spring rye grass and clover.**—*J. Amer. vet. med. Ass.* **118.** 323-324. [Authors' summary slightly modified.] 3743

Estrogenic activity was found in spring rye grass and spring clover. Little or no activity was found in extracts of autumn rye, spring alfalfa, blue grass, spring wheat, and orchard grass. The possibility of this being important in animal husbandry in the U.S.A. is considered.

OPSAHL, J. C., LONG, C. N. H. & FRY, E. G. (1951.) **Chorionic gonadotrophin, ACTH, and the adrenal-hyaluronidase relationship.** —*Yale J. Biol. Med.* **23.** 399-406. [Authors' summary copied *verbatim.*] 3744

Chorionic gonadotrophins (CG) and heat-inactivated chorionic gonadotrophins (HICG) isolated from human pregnancy urine caused a marked inhibition of hyaluronidase-enhanced spreading in normal and castrated mice in the presence of the adrenals and were without effect in the adrenalectomized animal. Furthermore, this effect was qualitatively similar to that found with ACTH.

The possibility that this inhibitory effect on hyaluronidase-spreading was due to non-specific toxicity, or mediation through the gonads, was ruled out insofar as possible.

In hypophysectomized mice, both CG and HICG were found to exhibit the same marked degree of inhibition in hyaluronidase-enhanced spreading.

The presence of ACTH activity in the CG preparation was indicated by the eosinopenia and reduction of adrenal ascorbic acid observed in the hypophysectomized rat.

Evidence is presented showing similarity of action on ACTH, CG, and HICG with respect to the specific biological effects investigated.

LOMBARD, L., MORGAN, B. B. & MCNUTT, S. H. (1951.) **Some pathologic alterations of the bovine oviduct.**—*Amer. J. vet. Res.* **12.** 69-74. [Authors' summary copied *verbatim.*] 3745

Gross and pathologic observations were made on the oviducts of 154 repeat breeder cows. Of 103 cows in a three-day repeated breeding group, 16 showed major pathologic

alterations which included 8 cases of hydrosalpinx, 3 of pyosalpinx, and 5 of chronic interstitial salpingitis. Cysts on the serosa were observed in 9 cases. Serosal nodules were observed in 55 of the 103 animals.

Of 51 cows representing twenty- to thirty-five-day repeat breeders, 6 showed major pathologic changes including 2 cases of pyosalpinx and 4 of chronic interstitial salpingitis. Serosal nodules were observed in 20 of the cases. Three hydatid cysts of Morgagni were detected on the fimbriae of one heifer.

JORDÃO, L. P. & GOUVEIA, P. F. (1950.) Eficiência reprodutiva do puro sangue Inglês, em São Paulo. **[Breeding efficiency of English Thoroughbred horses in Brazil.]**—*Bol. Industr. anim., S. Paulo.* **11.** 23-71. [English summary.] 3746

A statistical summary of the studbooks for a period of 36 years, 1909-45. Until the war in 1939, only 3·3% of the stallions were Brazilian born and 33⅓% of the mares. Most of the imports came from the U.K. until the war, and thereafter from Argentina. 15·1% of the Brazilian born mares and 11·8% of the imported ones were sterile. The average age of the local mares at first parturition lay between 3 and 7 years but no figure is given for the imported mares as many had foals before importation. Average length of life was 13 years, and length of gestation 340 days. Each mare averaged four colts. Among the foals, 47·7% were males.—R. MACGREGOR.

ABRAMS, J. T. (1951.) **Herd fertility in cattle: a note.**—*Vet. Rec.* **63.** 310-313. 3747

The nutritional aspects were discussed with particular reference to phosphorus and the Ca/P ratio, and the conclusions reached by workers in various countries were reviewed. The author considers that in Great Britain the role of vitamin D may be of more importance than the Ca/P ratio.—C. C. BANNATYNE.

WIESNER, B. P. & YUDKIN, J. (1951.) **Nutritional factors in reproductive failure.**—*Nature, Lond.* **167.** 979-980. 3748

The fertility of rats, as judged by the time taken to produce a litter after mating, size of litters and survival of young, was greater when the animals were fed a stock diet than when they were fed a purified diet. The addition of liver to the purified diet improved reproductive performance but did not bring it up to the level attained by the animals on the stock diet. Vitamin B_{12} may be in part responsible for this effect of liver but not for the whole of it.—R. MARSHALL.

MURRAY, M. D. (1951.) **Generalized ankylosis, a lethal factor occurring in Friesian cattle in New Zealand. I. A description of the deformity and the correction of the dystocia.**—*Aust. vet. J.* **27.** 73-75. 3749

CURRIE, E. J. (1951.) **Generalized ankylosis, a lethal factor occurring in Friesian cattle in New Zealand. II. Its mode of inheritance.** —*Ibid.* 76-78. 3750

I. A large number of calves with a common deformity occurred in four Friesian herds. In the cows bearing affected calves amnio-allantoic dropsy occurred with marked abdominal distension apparent at the 6th–7th month of pregancy. The foetuses had generalized ankylosis and deformity of the limbs and body. Embryotomy was necessary to remove the foetuses in all cases and details are given of the procedures adopted.

II. An investigation of the incidence of the deformity described in the previous abstract indicated that the cause was an autosomal recessive factor deriving from one bull.

—D. C. BLOOD.

See also absts. **3450** (artificial insemination in Denmark); **3654** (incidence and genetic linkage of gastric neoplasia in mice).

ZOOTECHNY

ASHER, T., KAEMMERER, K. & NEUHOFF, H. (1951.) Untersuchungen zum Problem des hormonalen Kapaunisierens. **[Caponization with the aid of hormones.]**—*Mh. prakt. Tierheilk.* **3.** 83-90. 3751

A study of methods and effects of caponization of cockerels with the aid of oestrogen. Advantages to the breeder are minimum risk, simplicity of usage and economy in feeding stuffs.—E. WALLICZEK.

BONSMA, J. C. (1951.) **Increased beef production.**—*Fmg S. Afr.* **26.** 58-63 & 68. 3752

As a result of observations and experiments at Mara Research Station, advice is given to South African farmers enabling them to increase their beef production. Calf production can be considerably increased by limiting the breeding to two short periods a year, instead of allowing indiscriminate breeding at all times. It is recommended that Afrikanders or indigenous cattle should be kept in preference to European breeds except at high altitudes and with ample water supply. Dehorning, especially of long horn breeds, con-

siderably increases subsequent weight and should be practised during calfhood.

—R. MACGREGOR.

SLIJPER, E. J. (1951.) **On the hump of the zebu and zebu-crosses.**—*Hemera Zoa.* **58.** 6-47. [In English: French and German summaries.] 3753

S. discusses the structure and function of the hump of zebu and zebu crosses basing his opinions on five specimens which he has dissected, namely an Ongole bull, a Madura bull, a Madura cow and two Bali cattle, all of these from Java, on photographs of other zebu cattle from India and Africa and on a review of the literature.

He denies that the hump contains a high proportion of fatty tissue that might serve as a reserve supply of nutrition during dry seasons. He states that the muscular tissues of the hump contain no more fat than muscle from other parts of the body.

The true zebu cattle have a thoracic hump while zebu crosses have a cervical hump and S. is of the opinion that the position of the hump may be used to judge the proportion of zebu blood in various types of cattle. He considers that the hump is functionless and is probably a secondary sexual characteristic. There are good descriptions of the anatomy and nerve supply of the specimens which were dissected. Further detailed study is required of the hump of the Indian zebu breeds. The thoracic type of hump consists of a greatly enlarged m. rhomboideus cervicis, it has no attachment to the vertebral column, is inserted into the lateral side of the cartilage of the scapula and fixed by the aopneurosis of the m. latissimus dorsi. The cervico-thoracic type is smaller, placed further forward, some of its muscle bundles are attached to the vertebral column and it is inserted into the medial surface of the cartilage of the scapula.—M.C.

CHIEFFI, A., PAIVA, O. M. & VEIGA, J. S. (1948.) Contribuição para o estudo da cronologia dentária no Zebu. (Estudo estatístico sôbre 428 observações em animais das raças Gir e Nelore). [**The ages at which the permanent incisor teeth of Gir and Nellore (zebu) cattle appear. (Cattle bred in Brazil).**]—*Rev. Fac. Med. vet., S. Paulo.* **3.** 251-269. [Abst. from English summary.] 3754

Allowing for accepted principles to account for variables, mean times for replacement of incisor teeth in Gir and Nellore (zebu) cattle, bred in Brazil, are given by the authors as: 1st incisor, 22·4 months; 2nd incisor, 28·2 months; 3rd incisor, 35·4 months; corner incisor, 5·8 months.—C. W. OTTAWAY.

BLAXTER, K. L., REINEKE, E. P., CRAMPTON, E. W. & PETERSEN, W. E. (1949.) **The role of thyroidal materials and of synthetic goitrogens in animal production and an appraisal of their practical use.**—*J. Anim. Sci.* **8.** 307-352. 3755

A comprehensive review of the existing knowledge of thyroid physiology in ruminants, pigs and poultry, and of the effect of thyroactive iodinated proteins and antithyroid or goitrogenic substances on growth and fattening rates, reproduction, lactation and egg production, and milk and carcass quality. The value of these substances in animal production was assessed, and the hazards involved were indicated. It was concluded that the ability to control thyroid function, besides providing a useful research tool, had distinct economic possibilities.—A. G. SINGLETON.

WILSON, W. O. (1949.) **High environmental temperatures as affecting the reaction of laying hens to iodized casein.**—*Poult. Sci.* **28.** 581-592. 3756

Loss of weight at high room temperature (100°F.) was not affected by iodized casein; there was a reduced intake of food and increased intake of water; consumption of both was lower when iodized casein was given at low temperature (70°F.). An increase of respiration and heart rate at high temperature appeared to be slightly greater in the presence of iodized casein. Reduction in egg production occurred at high temperature in the presence or absence of iodized casein; egg weight and shell thickness were decreased at high temperature; with iodized casein slightly lighter eggs and thicker shells were obtained; high temperature did not decrease the fertility of the eggs.

—R. MARSHALL.

MOULE, G. R. (1951.) **The aerial transport of feed for floodbound sheep.**—*Qd. agric. J.* **72.** 101-115. 3757

The transport of feed, in D.C.3 aircraft, to floodbound sheep in Southern Queensland is described. The selection of foodstuffs, flying times and costs, packing and dropping of the fodders, and ground organization for feeding the sheep are discussed. Baled lucerne hay and maize were the fodders most used.

—R. H. HAYMAN.

BENOIT, R. & DACCORD, A. (1948.) Le lapin: élevage—races—maladies. [**The rabbit.**] pp. 202. 83 figs. Lausanne: Librairie Payot. Sw. Fr. 6.80. 3758

This little book which is intended primarily for rabbit breeders contains chapters on breeding, rearing, housing and feeding, potential profits, methods of killing and skinning and origin and descriptions of breeds, hygiene, minor surgery, diseases of the digestive, respiratory, circulatory and nervous systems, infectious and parasitic diseases, nutritional disorders, poisonous plants, and tumours, details of Swiss, Belgian and French rabbit breeders' organizations and the preparation and judging of show animals. There are 83 illustrations.—E.G.

TECHNIQUE AND APPARATUS

ELLIS, M. B. (1950.) **A modification of the 'necol' technique for mounting microfungi.**—*Trans. Brit. mycol. Soc.* **33.** 22. [Abst. from abst. in *Rev. appl. Mycol.* **29.** 523. (1950.)] 3759

A modification of the 'necol' (cellulose acetate) technique for making mounts of microfungi in which mycelium and fructifications are borne on the surface of the substratum is useful. The 'necol' film with the fungus embedded in it is placed on a glass slide and acetone is pipetted on to it. The film dissolves, and spreads out in a ring, leaving the fungus behind. This ring is wiped off and repeated gentle washing with acetone clears away almost all the necol. The preparation is then mounted in lactic acid or lactophenol.

SOHIER, R. & MORET, R. (1951.) Aiguille double à pénétration automatique pour la pratique des épreuves cutanées tuberculiniques. **[A two-needle syringe for the tuberculin test.]**—*Pr. med.* **59.** 1091. 3760

A brief description of the use of a syringe for intradermal injection which has two needles which are inserted in one movement, the one charged with tuberculin and the other with a control material.

SLOVITER, H. A. (1951.) *In-vivo* **survival of rabbit's red cells recovered after freezing.**—*Lancet.* **260.** 1350-1351. [Author's summary copied *verbatim.*] 3761

Rabbit red blood-cells, recovered after freezing in the presence of glycerol and storage at −79°C, have been labelled with radioactive isotopes and injected into the donor animal. Comparison of the subsequent rate of loss of radioactivity from the circulating red blood-cells in these experiments with that found in control experiments indicates that the cells after freezing survive in the circulation for at least a few days. These experiments demonstrate that the previously frozen red blood-cells are viable and presumably capable of normal function.

See also absts. **3454** (tubercle bacilli cultures on Dubos' medium); **3462** (freeze-dried BCG); **3491** (Brucella ring test); **3497** (demonstration of *Cl. welchii* in tissues); **3502** (histoplasmin skin test); **3560** (preparation of rinderpest vaccine); **3594** (cultivation of Newcastle disease virus); **3645** (allergic test for diagnosis of parasitic diseases); **3691** (rapid hyperbilirubinaemia test); **3705** (thoracic surgery in small animals); **3717** (determination of red cell volume by radio-active chromium); **3718** (electromanometer); **3738** (pregnancy tests); **3751** (hormone caponization).

MISCELLANEOUS

BORISOVICH, F. K. (1946.) **[History of veterinary scientific societies in Russia.]**—*Veterinariya, Moscow.* **23.** No. 12. pp. 4-6. 3762

The first veterinary society in Russia, founded in 1846, was called the Society of Practising Veterinarians of St. Petersburg, and functioned till the revolution of 1917. It was given official recognition, its members engaging in research and introducing many reforms. Its first publication was The *Journal of Veterinary Science,* started in 1840 and continued till 1850. From 1853-68 the Society published *Notes on Veterinary Medicine,* followed from 1883 by *Veterinary Work.* This was replaced in 1889 by the fortnightly *Associated Veterinary News,* which became the organ of the All-Russian Veterinary Association in 1906. The Society thereupon produced the *Veterinarian,* 1906-17.

Towards the end of the century veterinary societies began to be founded all over Russia until by 1917 they covered nearly every region. A number of them published journals, such as the *Veterinary Review* by the Moscow Association, 1899-1917, and the *Veterinary Magazine* by the Warsaw Army Veterinary Society, 1896-1913. Several societies also established museums and libraries.

The present lack of veterinary societies is regretted. It is therefore suggested that such be formed, not, however, as independent bodies, but as sections of every branch of the All-USSR Scientific Engineering and Technical Society of Agriculture. Their functions would be to investigate the theory and practice of veterinary problems, to educate the public and to raise the technical standard of veterinarians.—F.A.A.

I. HORLEY, J. F. (1951.) **Organisation of a syringe service.**—*Lancet.* **261.** 50-52. 3763

II. GIBSON, A. (1951.) **A hospital syringe service.**—*Ibid.* 52-53. [Absts. from authors' summaries.] 3764

I. The equipment, organisation, and day-to-day running of a syringe service designed to serve a large hospital group, whose constituent hospitals are separated by several miles, was described.

II. An account of the organization of a hypodermic syringe service within a hospital.

SHEPHERD, H. E. (1950.) **A basic abattoir project.**—*J. Amer. vet. med. Ass.* 117. 30-38. 3765

S. submits plans for an abattoir capable of handling 50 cattle, 100 calves, 50 pigs and a few sheep per week, and shows how it could be built with the utmost economy. Details are given for similar buildings to handle larger numbers of animals.

REPORTS

CYPRUS. (Undated.) **Annual report of the veterinary service for the year 1947.** [ROE, R. J.] pp. 16. 14 tables. [Mimeographed.] 3766

The island continued to be free from any serious enzootic during the year. ANTHRAX and BLUETONGUE have been successfully controlled and practically eliminated by use of vaccines. One case of RABIES in an imported dog while in quarantine was reported. LEISHMANIASIS is commoner than has been supposed. No ox warbles (*H. bovis* or *H. lineatum*) were found, but the goat warble fly (*H. aeratum*) is common and sometimes attacks cattle. PARASITIC DISEASES are still common. Poultry disease was confined to FOWL TYPHOID, FOWL POX, and SPIROCHAETOSIS, but no NEWCASTLE DISEASE.

Although the numbers of sheep and goats were reduced somewhat, the pastures are still overcrowded. Pigs incrased from 30.000 to 50,000. No figures for oxen are given, but it is stated that they reached a dangerously low level as a result of excessive slaughtering and this has now been remedied. Licensing of stallions, inspection of cowsheds and dairies and meat inspection continued as heretofore.

—R. MACGREGOR.

GOLD COAST COLONY. (1950.) **Report on the Department of Animal Health for the year 1949-50.** [SIMPSON, S.] pp. 10. Accra: Govt. Printing Dept. 2s. 3767

A record showing some considerable number of successes, despite the rather gloomy tone in which it is written. RINDERPEST, introduced by smuggled cattle, sometimes bearing forged "immunization" brands, was successfully dealt with, with the loss of only 57 head. Goat virus and/or serum was used, but it is intended to introduce lapinized virus shortly. BOVINE CONTAGIOUS PLEURO-PNEUMONIA is still serious, but is also being held in check by vaccinations; no other really serious cattle diseases are reported. Two Government farms exist at which high grade animals are bred, and issued to Native Administration farms, only when these farms show clear evidence that the stock will be well cared for. Only in the paragraph on Education is real failure recorded; but it is hoped that this will turn to success in time.

—R. MACGREGOR.

NYASALAND PROTECTORATE. (1946.) **Annual Report of the Veterinary Department for the year ended 31st December, 1946.** [DE MEZA, J.]—*Rep. vet. Dep. Nyasaland.* pp. 4. 3768

Shortage of staff again handicapped the Department. A start was made with a livestock census and all stock were increasing except sheep. Re-distribution of cattle and rotational grazing were carried out in some areas.

There was increased production of ghee and plans were made to work the industry on a co-operative basis.

A tanning school operated throughout the year. Increased prices were recorded for hides and skins.

The Veterinary Department again purchased and distributed military meat supplies. More meat was slaughtered for local consumption than ever before.

The disease position improved. Only a few cases of BLACKLEG were reported; animals are vaccinated extensively every year. There were small outbreaks of FOWL TYPHOID and FOWL CHOLERA. Phenanthridinium 1553 was used with success for TRYPANOSOMIASIS. A fly decontaminating shed and two fly barriers were maintained on roads entering the country and nearly 5,000 tsetse flies were caught. Fly control staff were taken over from the Veterinary Department by a newly appointed Field Entomologist in September. EAST COAST FEVER was less common. REDWATER FEVER increased owing to a breakdown in dipping routine the previous year, but few deaths occurred as treatment with pirevan (N,N'-dimethylquinolyliummethyl sulphate-6-urea) was available. The RINDERPEST situation was good and game were

well controlled. Only 12 positive cases of RABIES were diagnosed from brains examined.
—R. G. MARES.

EIRE. (1950.) **Nineteenth Annual Report of the Minister for Agriculture 1949-50.** pp. vi+189+[87]. Dublin: Stationery Office. Items of veterinary interest pp. 38-40, 45-54, 85-95 & 141-147. 5s. 3769

There were no serious outbreaks of disease in livestock, but FOWL PEST appeared for the first time in Jan. 1950, and was eradicated by March 1950 at a cost of £7,698, paid in compensation for birds slaughtered and carcasses destroyed. TB. was found in 1,895 cattle, a number equal to the 1946-47 figure and disappointing after the reduction in the years '47, '48, & '49. TRICHOMONIASIS was diagnosed in Co. Leitrim and is being dealt with by the establishment of a temporary artificial insemination centre. SHEEP SCAB is also being reduced.

The Veterinary College of Ireland, besides its tutorial function, carries out physiological, biochemical and pathological examinations, many being on meat and meat products intended for export. Instruction was also given to the laboratory staffs of various food factories. The Veterinary Research Laboratories investigated specimens of suspected TB., ANTHRAX (all negative) etc. and produced vaccines for BLACKLEG, BRAXY and CONTAGIOUS ABORTION, (over 100,000 cattle now receive calfhood vaccines strain 19). They also investigated OEDEMA DISEASE OF PIGS and "BOG CROOK", an APHOSPHOROSIS of cattle.—R. MACGREGOR.

NORWAY. (1949.) Veterinaervesenet 1947. **[Annual report 1947 of Director of Veterinary Services, Norway.]** pp. 87. Oslo: H. Aschehoug & Co. 3770

The incidence of the most important diseases—F. & M. DISEASE, ANTHRAX, BLACKLEG, SWINE FEVER, BRADSOT, EQUINE INFECTIOUS ANAEMIA, EQUINE PLEURO-PNEUMONIA, STRANGLES, BOVINE MALIGNANT CATARRH, SWINE ERYSIPELAS and TRICHINOSIS—is tabulated according to province and year, back to 1916. TRICHINOSIS has been present only since 1940 and was spread over most of the provinces, though not heavily, in 1947. A table shows the incidence of the chief diseases of horses, cattle, pigs, sheep, goats, dogs, fur-bearing animals and fowls, and extracts from the reports of the district veterinarians are given.

TB. IN CATTLE was well under control: 3,440 cattle were tuberculin-tested and only 2% reacted. All except one of 3,183 herds under control were free from BRUCELLOSIS.
—J. EDWARDS.

NORWAY. (1950.) Veterinaervesenet 1948. **[Annual report 1948 of Director of Veterinary Services, Norway.]** pp. 91. Oslo: I. Kommisjon Hos. H. Aschehoug & Co. 3771

In 1948, 637,000 animals were treated. SWINE ERYSIPELAS was by far the most common infectious disease, and 15,650 cases were seen. Next common were MANGE IN PIGS and RINGWORM IN CATTLE. F. & M. DISEASE, ANTHRAX, SWINE FEVER, EQUINE INFECTIOUS ANAEMIA and EQUINE CONTAGIOUS PLEURO-PNEUMONIA were virtually absent, whilst TRICHINOSIS had increased somewhat since the previous year.

Only 1·4% of 3,300 tuberculin-tested cattle reacted positively, and there were 3,185 herds under control for BRUCELLOSIS, which were free from infection. State control of SALMONELLOSIS [PULLORUM DISEASE] began late in 1947. In the course of diagnostic testing infection was found in 114 flocks out of 154 (74%).

Among the extracts from reports of district veterinarians, penicillin cures of JOINT-ILL in a foal, BOTRIOMYCOSIS in a horse and PIROPLASMOSIS in a cow, are claimed.

The usual statistical data about diseases, meat inspection and diagnostic work makes up the greater part of the report.—J. EDWARDS.

SWEDEN. (1949.) Det civila veterinärväsendet år 1946. **[Sweden. Report of the Civil Veterinary Service for 1946.]** [ALEGREN, A.] pp. 65. Stockholm: Kungl. Boktryckeriet. 3772

The organization is described. The number of veterinarians in Sweden was 651 in 1946. Their types of work are shown in a table which also gives figures on a geographical basis. The majority (250) were district veterinarians and the three next most numerous groups were meat inspectors (45), military veterinary surgeons (26) and personnel attached to provincial agricultural societies (25).

The animal health situation in the provinces is described. Nutritional and metabolic diseases were prominent among those which gave most trouble. In Kalmar province a considerable outbreak of STRANGLES gave much trouble and BOVINE PIROPLASMOSIS was also prevalent, with 653 cases observed. It was also common elsewhere.

ANTHRAX caused 300 deaths in 20 herds and BLACKLEG five deaths in cattle. Two outbreaks of F. & M. DISEASE occurred, both in

Malmöhus: both were eradicated economically. 106 cases of EQUINE INFECTIOUS ANAEMIA were diagnosed P.M. and there were 281 outbreaks of FOWL TYPHOID.

In the TB. control campaign 171,200 cattle were tuberculin tested for the first time and 13·8% reacted. The figures show great geographical differences, Malmöhus returning the highest figure of 26·7% whilst the northern counties gave figures well below 1%. In follow-up tests on animals previously tested, the average reactor percentage was 0·7, for 914,600 cattle. Figures are also given for considerable laboratory diagnosis work on samples of excretions and milk.

Work on a large scale was also done for the control of BOVINE BRUCELLOSIS. The infection was verified in 7,680 herds comprising 41,000 cattle. 733 infected animals were slaughtered and state compensation money was paid.

Meat and milk inspection data are also included. The incidence of the 15 most important animal diseases is shown in a table.

—J. EDWARDS.

U.S.A. (1950.) **Michigan. Eleventh Annual report of the Regional Poultry Research Laboratory, East Lansing, Michigan, July 1st, 1949 to June 30th, 1950.** [WINTON, B.] pp. 27. [Mimeographed.] 3773

Despite rigid quarantine measures imposed on the premises where work on LYMPHOMATOSIS is in progress, INFECTIOUS BRONCHITIS has appeared among the poultry. A further complication encountered in the work on LYMPHOMATOSIS is that even the stock which is most nearly free from the virus has an annual mortality from the naturally occurring disease of 15–18%. An attempt to breed chickens which are naturally highly resistant to LYMPHOMATOSIS has not given encouraging results.

—G. B. S. HEATH.

U.S.A. (1950.) **Report on infectious equine encephalomyelitis in the United States in 1949.** [SIMMS, B. T.] pp. 4. Washington: U.S. Department of Agriculture, Agricultural Research Administration Bureau of Animal Industry. [Mimeographed.] 3774

Of 4,037 cases recorded during 1949, 28 occurred in horses which had been vaccinated. Although the general pattern of the disease remained unaltered, mortality was 60%, which is the highest for the past 14 years; this, to a large extent, was due to the extremely heavy mortality in Louisiana (98%), where the Eastern type virus is present. 37% of the total number of reported cases were from Louisiana.

—G. B. S. HEATH.

U.S.A. (1949.) **South Dakota. Sixty-second Annual Station Report July 1, 1948 to June 30, 1949, Agricultural Experiment Station, South Dakota State College of Agriculture and Mechanic Arts, Brookings, S.D.** pp. 91. Items of veterinary interest pp. 59-66. 3775

Out of 1,200 chickens vaccinated with the new vaccine for NEWCASTLE DISEASE and kept along with naturally affected birds, as many as 43% died within two weeks. Exposure to the disease before inoculation may have accounted for a higher death rate than might otherwise have occurred.

During the last few years the losses of lambs from PARASITIC DYSENTERY have decreased considerably. This may be due to better management, but especially to a reduction in the number of sheep kept. If sheep are again increased it is possible that the losses may once more mount up.

The control of ox warble fly is discussed at some length and the use of rotenone was tried, rubbed in by hand and sprayed by a pressure spray. The difficulties of spraying are discussed. The efficiency of D.D.T. as an insecticide for livetock was compared with that of chlordane and it was found that there is no great difference between the action of the two drugs.

"ALKALI DISEASE" caused by SELENIUM POISONING is described and experiments to find a better antidote than arsenic for the condition are reported. That selenium enters the animal body as selenium-cystine, and that the function of an important sulph-hydryl enzyme is interrupted by the selenium seems to be established.

Several cases of CORNSTALK DISEASE are reported from the Huron area. Samples of maize stalk from the fields were obtained. These did not seem to be abnormal in respect of gross nitrogen fractions, but paper chromatograms revealed that there were differences in free amino-acid composition.

—D. S. RABAGLIATI.

BOOK REVIEWS

GALE, E. F. [B.A., Ph.D., Sc.D. Fellow of St. John's College, Cambridge.] (1951.) **The chemical activities of bacteria.** pp. 213. London: University Tutorial Press Ltd., 3rd Edit. 9s. 6d. 3776

In this useful book the author gives an

account in 11 chapters of the chemical activities of bacteria. He discusses the advances made in the last three or four years in the knowledge of synthetic systems and their control in the cell by "genes". Some of these ideas and the facts on which they are based are incorporated in this third edition and certain alterations of material presented in earlier editions were made in order to keep the book approximately the same size. The subject matter would be helpful to students of biochemistry, bacteriology or chemistry or to research workers requiring a concise account of the background to present research in chemical microbiology. There are many tables to summarize and figures to illustrate the material under discussion.

The book is well bound and the printing and paper are excellent.—E.M.J.

WHATMOUGH, W. A. [B.Sc., Ph.C., F.R.I.C.] (1951.) **The chemist and druggist poisons guide. An encyclopaedia of poisons law. Vol. I. Poisons list and key.** pp. 89. London: The Chemist and Druggist. 20s. 3777

Volume I comprises the Chemist and Druggist British Poisons Lists and Key. This includes a Summary of Class Characteristics, a Poisons List, Dangerous Drugs List and an Extended List of Poisons of 89 pages. Printed on loose leaves with a ring back attachment the book has the title in distinctive lettering on a stiff cover.—E.M.J.

LEE, J. A. (1950.) **A synopsis of anaesthesia.** pp. 354. Bristol: John Wright & Sons, Ltd. London: Simpkin Marshall Ltd. 2nd Edit. 15s. 3778

In the second edition of a book which provided a summary of current teaching and practice and source of reference for those working in the field of anaesthetics the author has reflected the many changes which have taken place in the interval of three years. Additional notes have been added dealing with the physiology of the circulation, intravenous procaine, stellate ganglion block, vagus block, thoracic sympathetic block, electrical anaesthesia, the intra-arterial injection of thiopentone and its dangers, blood transfusion, dextran, hyaluronidase, anaesthesia in surgery of the heart, and trilene in obstetrics.

Certain chapters have been expanded or rewritten and the author gives a list of the works consulted in the revision.

The book comprises 18 chapters, brought up to date to 1950, in compact form, and having a strong serviceable cover.—E.M.J.

ZWEIFACH, B. W. & SHORR, E. [Edited by.] (1950.) **Factors regulating blood pressure. (Transactions of the Third Conference May 5-6, 1949, New York, N.Y.)** pp. 280. New York: Josiah Macy, Jr. Foundation. $2.55. 3779

This compilation is a transcript of a two-day discussion between twenty-eight American investigators of the various factors which regulate blood pressure. The theme of the conference was a discussion of haemodynamics as it applies to the general circulation as well as to particular organs such as the kidney.

Some of the topics discussed were the control of peripheral circulation, the importance of venous circulation, the relationship of cardiac output to peripheral and cerebral vascular adjustment, haemodynamics of venous circulation and hypertension, the role of the sympathetic nervous system in hypertension as shown by the action of sympatholytic and depressor drugs. In conjunction with these topics many methods—both direct and indirect—of measuring blood pressure were discussed and the deficiencies or difficulties of the various techniques exposed as a result of the very extensive practical experience of the various experts.

These transactions are well printed on good paper but are contained in an unsubstantial paper cover. In most cases the topic of discussion has an appended bibliography.

—F. R. BELL.

WILLIAMS, R. H. [Edited by.] [M.D. Executive Officer and Professor of Medicine, University of Washington Medical School, Seattle.] (1950.) **Textbook of endocrinology.** pp. xii + 793. Philadelphia & London: W. B. Saunders Co. 50s. 3780

The object of this book, as stated in the preface, is "to provide a condensed and authoritative discussion of the management of clinical endocrinopathies, based upon the application of fundamental information obtained from chemical and physiologic investigations". A study of the book leads to the conclusion that this objective has been well achieved. There are twelve chapters which deal in turn with the physiology and pathology of the various endocrine glands and the interrelationships between them and other systems of the body. Twelve authors have participated, each dealing with his own special field. While the book thus appears to be a valuable contribution to medical endocrinology, it is necessary here to consider it from the veterinarian's point of view. Since considerable species differences exist in endocrine function, the methods of human clinical

endocrinology are not always applicable to veterinary practice and textbooks which deal with endocrinology in a more general way are likely to be of greater value to the veterinarian. It is somewhat surprising in such a comprehensive book that in the section dealing with lactation there is no adequate account of the role of the posterior pituitary in milk ejection. This would surely have been of more interest to the reader than the curious statement on page 380 that "a bovine state of mind" is a known aid to the maintenance of lactation!!

—ALFRED T. COWIE.

DAVIDSON, J. N. [D.Sc., M.D. Gardiner Professor of Physiological Chemistry in the University of Glasgow.] (1950.) **The biochemistry of the nucleic acids.** pp. ix+163. London: Methuen & Co. Ltd. New York: John Wiley & Sons, Inc. 7s. 6d. **3781**

This small book is the first volume of a new series dealing with modern biochemistry along similar lines to the same publisher's physical series. Of the 15 chapters, three discuss the organic chemistry of the nucleic acids, nucleotides (base, pentose and phosphoric acid), nucleosides (dephosphorylated nucleotides), the natural purine and pyrimidine bases and the way all combine to give the nucleic acids. The influence of chromatography in elucidating their structure is also discussed. An account of the nucleases and related enzymes follows and then three chapters on physical (ultra-violet absorption), histochemical and chemical methods of estimating nucleic acids. Chapters on the nucleic acids of tissues, cell protoplasm and the cell nucleus lead to chapters on metabolism, biosynthesis and biological activity, concluding with a discussion of nucleic acids in bacteria and viruses.

The book is an excellent account of nucleic acids and will be of value to research workers and students. A good knowledge of organic chemistry is, however, a prerequisite in view of the compactness of the subject matter. The literature for each chapter is given in a composite reference list at the end of the book. It is well written, easy to read, printed in clear type on good paper and is neatly bound.

—MALCOLM WOODBINE.

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AUTHOR INDEX

[The numbers refer to abstracts and not to pages]

A

Anon., 4, 12, 70, 85, 95, 237, 264, 323, 357, 359, 400, 432, 595, 620, 623, 861, 868, 896, 897, 898, 901, page 192, 1122, 1184, 1203, 1223, 1228, 1229, 1243, 1261, 1336, 1385, 1454, 1526, 1562, 1563, 1566, 1568, 1574, page 339, 1602, 1603, 1647, 1715, 1811, 1854, 1855, 1871, 1888, 1889, 1893, 2201, 2202, 2204, 2208, page 482, 2294, 2372, 2406, 2455, 2456, 2457, 2458, 2460, 2462, 2463, 2483, 2537, 2549, 2585, 2589, 2596, 2597, 2598, 2646, 2733, 2734, 2742, 2760, 2761, 2763, 2765, 2770, 2771, 2784, 2785, 2791, 2802, 2902, 2977, 2979, 3104, page 654, ter, 3253, 3341, 3371, 3391, 3400, 3409, 3411, 3422, 3423, 3425, 3426, 3429, 3430, 3458, 3487, 3549, 3562, 3613, 3769, 3770, 3771, 3775.
Aagaard, K. See Nissen, N. I. et al., 2365.
Aaser, C. S., 2107, 3060.
Abbas, T. M., 1511.
Abdala, O. See Vaitsman, J., 3229.
Achary, G. R. See Mudaliar, S. V. et al., 3201.
Abderhalden, R., 1896, page 59.
Abell, M. R. & Beveridge, J. M. R., 1086.
—, — & Fisher, J. H., 1085.
Abelson, P. H. & Aldous, E., 1660.
Abonnenc, E. See Floch, G., 2615.
Abraham, E. P., 827.
Abramov, I. V., Tsaprun, A. A. & Lebedev, E. M., 3532.
Abrams, J. T., 3747.
Ackermann, W. W., 3611.
Ackert, J. E., 472.
—, Cooper, R. M. & Dewhirst, L. W., 2633.
— & Lingenzowski, F. L., 3275.
Ada, G. L. & French, E. L., 2813.
Adámat, S. & Niznánsky, F., 1187.
Adams, R. D. See Swank, R. L., 3676.
Adamstone, F. B., Krider, J. L. & James, M. F., 2332.
— & Spector, H., 146.
Adelson, L. See Tennant, R. et al., 516.
Addis, T. See Rather, L. J., 1159.
Adler, H. E., Willers, E. H. & Campbell, J., 2030.
Adolph, E. F., 1157.
Adrian, E. D., 1500.
Aebersold, P. C., 189.
Aegerter, E. & Long, J. H., 819.
Aggeler, P. M. & Lucia, S. P., 2212, page 59.
Agnew, L. R. C., 2083.
Agrimi, P., 3347.
Ainsworth, G. C., 672, 1289, 1290.
Ajello, P., 777, 2402.
Akcay, S. & Pamukcu, A. M., 2863.
—, — & Baran, S., 2884.
Akita, T. See Yamafuji, K. et al., 3255, 3256.
Akiyama, Y. See Tabuchi, E. et al., 2580.
Akman, L. See Stamler, J. et al., 1785.
Albaum, H. G. See Goldfeder, A., 3659.
Albert, A., 1898, page 339.
—. See also Fildes, P. et al., 2681.
Alberts, J. O. & Graham, R., 29.
—. See also Prier, J. E., 1614.
—. See also Prier, J. E. et al., 730.
—. See also Roberts, E., 655.
Albien, W., 289.
Albornoz, J. E., 2494.
Albright, F. & Reifenstein, E. C., 496.
Alburger, J. R. See Hoyt, A. et al., 1561.
Aldous, E. See Abelson, P. H., 1660.
Alegren, A., 902, 3588, 3772.
D'Alessandro, G., Burgio, G. R. & Mariani, 1727.
Alexander, C. C. See Harris, H. J. et al., 3058.
Alexander, E. R. See Loosli, C. G. et al., 2896.
Alexander, F., 2708.
Alexander, M. M., 1396.
Alexander, H. E. & Leidy, G., 3161.
—, Wright, G. G. & Baldwin, A. C., 969.
Alexander-Jackson, E. See Wuerthele-Caspe, V. et al., 1428.
Alford, L. R., Holmes, N. E., Scott, W. J. & Vickery, J. R., 3367.
Alicata, J. E., 3273.
Alikaev, V. A., 1224.
Alin, K., 989.
Allcroft, R., 1791.
— & Blaxter, K. L., 1792.
—. See also Blaxter, K. L., 173.
—. See also Jamieson, S., 476.
Allen, D. R., 509.
Allen, F. E. See Slanetz, L. W., 299.
Allen, M. J. See Hertz, R. et al., 2379.
Allen, R. M. See Wuerthele-Caspe, V. et al., 1428.
Allnutt, R. B., 622.
Almasy, F. See Krupski, A. et al., 2079.
Almquist, J. O., 2748.
—. See also Myers, R. M., 3735.
Alston, J. M., Joshua, J. O., Borg-Petersen, C., Broom, J. C., Stuart, R. D., Field, H. I. & Edwards, J. T., 2533.
Alström, In., 3039.
Altan, Y. & Esin, I., 3313.
Altara, I., 2000.
Alwar, V. S. See Mudaliar, S. et al., 3201.
van Amerongen, A. J., 2623.
Ammann, K., 2678.
Ammerman, F., 1553.
Amromin, G. D. See Taubenhaus, M., 1177.
Anantakrishnan, C. P., Rao, V. R. B., Paul, T. M. & Rangaswamy, M. C., 548.
Anderson, D. See Russell, B., 194.
—. See also Spink, W. W., 1637.
Anderson, E. D., 3390.
Anderson, G. C. & Hogan, A. G., 142.
Anderson, G. W., Stevenson, I. L. & Garrard, E. H., 2842.
—. See also Cooper, J. B. et al., 3166.
Anderson, H. C. & McCarty, M., 3261.
Anderson, J. A. See Wuerthele-Caspe, V. et al., 1428.
Anderson, J. O. See Milligan J. L. et al., 1444.
Anderson, J. P., 3471.
Anderson, R. D. See Wilson, D. R. et al., 2283.
Anderson, S. G., 100.
Anderson, T. F., 739.
Anderson, W. A. See Davis, C. L., 1367.
Andervont, H. B., 1062.
— & Dunn, T. B., 3658.
Ando, K. See Kobayashi, R. et al., 1009.
Andral. See Lucas, A. et al., 968.
Andral, L. See Lucas, A. et al., 3455.
Andreev, K. P., 1089.
Andrès, J., 1556, 1929.
Andrewes, C. H., 2070.
—, Lovelock, J. E. & Sommerville, T., 1705.
— & Niven, J. S. F., 3236, 3237.
Andrews, F. N. See Campbell, D. J. et al., 2725.
—. See also Doyle, L. P. et al., 1149.
—. See also Hillaert, E. L. et al., 34.
Andrews, M. C. See Hellman, L. M. et al., 1512.
Androdias, A., Enesco, M. & Touratier, L., 823.
Angevine, D. M. See Luedtke, W. E., 3695.
—. See also Spencer, G. R., 913.
Angulo, J. J., Watson, J. H. L. & Olarte, J., 1359.
Anigstein, L., Whitney, D. M. & Micks, D. W., 521.
Anslow, R. O. See Casals, J. et al., 2899
Antepliogiu, H. See Kurtpinar, H. et al., 3279.
Anthony, D. J., 156.
Antonelli, G. See Castagnoli, B., 316.
Aoki, T. & Wada, M., 3708.
D'Apice, M. See Penha, A. M., 3162.
Aramburu, H. G., 3206.
Aramburu, T. See Spies, T. D. et al., 839.
Arbogast, F. M. See Todd, A. C. et al., 2943.
Arbogast, R. See Cohen, S. S., 740.
d'Arces, J., 385.
Archetti, I. & Horsfall, F. L., 2008.
Arens, K., 305.
Argaud, R. & Gan, J., 221.
Argun, T., 2225, 2228.
Arildzhanov, K. A., 3730.
Arima, S. See Kobayashi, R. et al., 1009.
Arkin, A. M. & Sugiura, K., 453.
—. See also Sugiura, K., 1064.
de Armas, J. See Vogelsang, E. G., 2544.
Armbrust, K., 2535.
Armstrong, J. B. & White, J. C., 1786.
Arnold, J. P., 812.
Arnold, T. F., 1099.
Arnott, W. M. See Whitfield, A. G. W. et al., 2122.
Arnoult, H. See Ceccaldi, J. et al., 1308.
Aronson, J. D., 3153.
Arrhenius, S., 3045.
Arrighi, R., 1662.
Arroyo Martín, C., 3616.
Arthur, D. R., 1406, 1407.
Artioli, D., 1294, 1825, 2527, 2752.
Arzumanjan, E. A., 1827.
Ascoli, A., 646.
Asdell, S. A. See Hansel, W., 3742.
Ashenbrucker, H. See Cartwright, G. E. et al., 3301.
Asher, T., Kaemmerer, K. & Neuhoff, H., 3751.
Ashkenazy, M. See LeRoy, H. V. et al., 3022.
Ashton, W. M., 2210, page 191.
Van Asperen, K. See Seelkes, L., 485.
de Assis, A. & Leite-Ribeiro, V. R., 932.
Atanasiu, P. See Lépine, P., 1365.
—. See also Lépine, P. et al., 2574.
Aterman, K., 1498.
Atkeson, F. W. See Dahm, P. A. et al., 2157.
—. See also Fountaine, F. C., 1766.
—. See also Parrish, D. B. et al., 1834.
Atkinson, W. B., Kaunitz, H. & Slanetz, C. A., 2334.
Aub, J. C. See Glinos, A. D. et al., 3660.
Auber, L. See Burns, M., 3683.
Aubert, A., 3234.
Aubert, E. See Starkey, H., 1210.
Audu, J., 3561.
Auer, J., 2993.
Ault, C. N., 1041, 3264.
Aun, L. K., Wright, R. A. & Sen, N. K., 2844.
Austin, C. R., 860, 2645.
Austin, J. A. See Kartsonis, P. L., 764.
Aviérinos, F. See Mattei, C. et al., 3186.
Ayer, J. P. See Taylor, S. G. et al., 1429.
Azizuddin, I. M., 1612.
Azzi, A., 624.

B

Babcock, W. E. See Osebold, J. W. et al., 3158.
Babers, F. H. & Culpepper, G. H., 1033.
Babik, J., 376.
Baboshina, N. A., 2561.
Bachman, M. C. See Felsenfeld, O. et al., 1491.
Bachrach, H. L., 3541.
Backhouse, T. C. & Bolliger, A., 3194.
Bacon, R. L. See Kirkman, H., 454.
Bacq, Z. M., 2702.
Bague, J., 1558.
Bailanger, J. See Pautrizel, R. et al., 2637.
Bailey, J. H. & Cavallito, C. J., 1128.
Bailey, K., Bettelheim, F. R., Lorand, L. & Middlebrook, W. R., 3041.
Bailey, M. L. See Salk, J. E. et al., 3553.
Bailly, J., 1341.
—. See also Remlinger, P., 1340, 1349, 2570.
Bailly, M. D., 1395.
Baisden, M. S., Johnson, H. W. & Larsen, A. B., 1270.
Baker, A. L. & Black, W. H., 1547.
Baker, B. L. See Castor, W. C., 1499.
Baker, C. C., 1565.
Baker, D. W., 1044.
Baker, F. & Nasr, H., 3029.
Baker, G. A. See Gorham, J. R., 950.

Bakker, S., 3141, 3157.
Bakos, K., 3475.
— & Lehnert, E., 1615.
—. See also Dinter, Z., 3587.
—. See also Hjärre, A., 1354.
Balch, H. H., 137.
Baldridge, G. D. See Kligman, A. M. et al., 3333.
Baldwin, A. C. See Alexander, M. M. et al., 969.
Baldwin, D. See Taylor, C. B. et al., 1467.
Baldwin, R. R. See Keener, H. A. et al., 3666.
v. Ballmoos, P., 1288.
Bane, A., 1533.
—. See also Haggqvist, G., 244.
Banfield, W. G., Jr. See Durlacher, S. H. et al., 846.
Bang, F. B., 3250.
—, Foard, M. & Karzon, D. T., 2034.
—, Levy, E. & Gey, G. O., 3545.
— & Libert, R., 2593.
—. See also Karzon, D. T., 3591.
—. See also Liu, C., 753.
Bankowski, R. A., 733.
—. See also Beach, J. R. et al., 2032.
—. See also Furman, D. P., 842.
Banks, P. N. See Greer, F. G., 180.
Banks, S. O., Bhaskar, S. N. & Weinmann, J. P., 2967.
Baran, S. See Akcay, S. et al., 2884.
Bárány, E. & Nordqvist, P., 207.
Barbè, A. See Mattei, C. et al., 3186.
Barber, C. W. See Wheeler, R. S. et al., 1327.
Barber, M. A. See Roderuck, C. E. et al., 2338.
Barber, T. E. See Herrell, W. E., 1635.
Barberio, J. R. See LeVeen, H. H. et al., 848.
Barbour, G. H. See Rountree, P. M. et al., 3132.
Barch, S. See Wilson, J. G., 1771.
Bardoulat, 716.
Bareggi, G., 1318.
Barer, R., 2754.
Bariéty, M. & Brocard, H., 1265.
—, Vittoz, A. & Sifferlen, J., 1922.
Barke, A., 1733.
Barker, H. A. See Clifton, C. E. et al., page 191.
—. See also Raffel, S. et al., 1569.
Barker, J. R., 2975.
Barlow, F. See Hadaway, A., 2054.
Barner, R. D., 51.
— & Oberst, F. H., 2814.
Barnicot, N. A., 1441, 3710.
Barnum, C. P. See Huseby, R. A. et al., 460.
Barnum, D. A. See Stewart, A. G. et al., 1479.
Barotte, J. & Grasset, R., 1164.
Barr. M., 2834.
— & Glenny, A. T., 3615.
Barratt, R. W. & Tatum, E. L., 887.
Barrett, G. R. See Marion, G. B. et al., 3078.
Barett, M. K. & Deringer, M. K., 3657.
Barrick, E. R. See Hobbs, C. S. et al., 1870.
Barrie, H. J. See Mahoney, L. J., 527.
Barron, E. L., Garrard, E. H. & Branion, H. D., 2843.
Barrow, P. See Leahy. J R., page 654.
Barry, G. T., 1823.
Barry, V. C., Belton, J. G., Conalty, M. L. & Twomey, D., 17.
Barski, G. & Maurin, J., 2001.
Bartel, H., 2660.
Barthe, C. See Pautrizel, R., 420.
Bartholomew, J. W. & Mittwer, T., 602.
—, Roberts, M. A. & Evans, E. E., 3190.
Bartlett, D. E. & Dikmans, G., 1990.
—, Teeter ,K. G. & Underwood, P. C., 59.
Barwell, C. F. & Bishop, L. W. J., 2903.
Basinski, D. H. See Roderuck, C. E. et al., 2338.
Baskett, A. C. & Hinshelwood, C., 3519.
Bass, A. D., Yntema, C. L., Hammond, W. S. & Frazer, M. L., 3331.
Bass, E. See Corrias, 1316.
Basset, J., 1388, 3211, 3543.
Bassett. A. G. & Sewell, O. K., 2422.
—. See also Sewell, O. K. et al., 825.
Bastman-Heiskanen, L. See Vartiainen, I., 2936.
Bastrup-Madsen, P., 176.
Bates, J. D., 1347.
Bates, M., 1575.
Bates, R. W. & Lowry, C., 1200.
Battaglia, C. See Razza, F., 1249.
Batteli, C., 2624.
Batterman, R. C. & Rovenstine, E. A., 1884.
Batty, I. See Oakley, C. L. et al., 3257.
Baudrimont, A. See Dubreuil, G., page 191.
Bauer, D. J., 3610.
Bauer, H. R., 1571.
Bauer, K. H., page 339, 3112.
Baumann, R., 2093.
Baumgartner, H., 8.
Baxter, E. S., Clarke, P. M., Dodd, F. H. & Foot, A. S., 1207.
Bay, W. W. See Hutchings, L. M. et al., 3494.
Baylis, J. R., 2186.
Bazex. See Nanta et al., 1061, 2952.
Beach, J. R., 89.
—, Bankowski, R. A. & Quortrup, E. R., 2032.
—. See also Lerner, I. M. et al., 1621.
Beakbane, H. R. & Wilde, J. K. H., 2617.
Beakey, J. F. See Gaensler, E. A. et al., 1129.
Beamer, P D., Sutherland, A. K. & Schmittle, S. C., 90.
Bean. W. B. See Franklin, M. et al., 499.
Beard, D., Eckert, E. A., Czáky, T. Z., Sharp, D. G. & Beard, J. W., 2316.
Beard, J. W. See Beard, D. et al., 2316.
Beard, R. R., 3638.
Beaton, W. G., 1238.
Beaudette, F. R., 386.
—, Bivins, J. A. & Miller, B. R., 91.
— & Black, J. J., 873.
de Beaufort, L. F., page 482.
Béchade, A. & Bouton, P., 869.
Becher, F. See Soehring, K., 2194.
Beck, A. B., 1173.
Beck, E., 445.
Beck, E. M., Fenton, P. F. & Cogwill, G. R., 2969.
Beck, M. D. See Bell, J. A. et al., 1386.
Becker, D. E. & Smith, S. E., 2139, 3667.
—. See also Smith, S. E. et al., 151.
Becker, R. B. See Uzzell, E. M. et al., 560.
Beckman, H. F. See Bushland, R. C. et al., 2408.
—. See also Claborn, H. V. et al., 3057, 3366.
Bedford, T. H. B., 1814.
Bedson, S. P., Downie, A. W., MacCullum, F. O. & Stuart-Harris, C. H., page 653.
—. See also Stoker, M. G. P. et al., 407.
Beeler, J. W., Tillisch, J. H. & Popp, W. C., 2374.
Beerstecher, E., Jr., 1770.
—. See also Williams, R. J. et al., page 272, 3436.
Beeson, K. C. See Keener, H. A. et al., 1072.
—. See also Smith, S. E. et al., 151.
Begg, H. & Whiteford, H. A., 2375.
Behrens, H., 3010, 3026, 3345.
— & Brüning, P., 3027.
Beidleman, B. See Duncan, G. G. et al., 2119.
Beijers, J. A., Berendsen, H. L. & Hesse, N. C. W., 2481.
—, De Wael, J. & Seekles, 2670.
Beiler, J. M. See Moss, J. N. et al., 2924.
Bekker, P M., Graf, H., Malan, J. R. & van der Merwe, S. W., 2686.
Belford, J. & Bonnycastle, D. D., 179.
Belin, Cl., 3212.
Bell, E. J. See Parker, R. R. et al., 399.
Bell, J. A., Beck, M. D. & Huebner, R. J., 1386.
Bell, J. F. See Eklund, C. M. et al., 3556.
Bell, J. M. See Galgan, M. W. et al., 1443.
Bell, M. See Skipper, H. E. et al., 129, 2317.
Bell, M. C., Whitehair, C. K. & Gallup, W. D., 2960.
Bell, W. B., 9, 2286.
Beller, K., page 482.
—. See also Bersin, T., 2974.
Bellet, S., Gazes, P. C. & Steiger, W. A., 2354.
—, Steiger, W. A. & Gazes, P. C., 2355.
Belonje, C. W. A. See Farrelly, B. T. et al., 419.
Belschner, H. G., 1242.
Belton, J. G. See Barry, V. C. et al., 17.
Bendixen, H. C., 3449.
Bendz, G., 1903, page 191.
Benedek, T., 3182.
Benedetti, F., 3055.
Benesch, F. & Wright, J. G., page 191.
Ben-Harel, S., 2265.
Bennett, I. L., Jr. See Rich, A. R. et al., 2127.
—. See also Wagner, R. R., 2006.
Benoit, R & Daccord, A., 3758.
Bentley, H. R., McDermott, E. E., Moran, T., Pace, J. & Whitehead, J. K., 3699.
—, —, Pace, J., Whitehead, J. K. & Moran, T., 502.
Bentley, O. G. See Grummer, R. H. et al., 152.
Benzie, D., 2418.
Béquignon, R., Lamy, R. & Vialat, C., 1345.
Berarducci, C., 3061.
Beregovoi, L., 3068.
Berendsen, H. L. See Beijers, J. A. et al., 2481.
Berg, H., 269.
Van den Berg, H. A. See Jansen, J. et al, 1783.
ten Berg, J. A. G. See de Langen, C. D., 1114.
Berge, E. See Silbersiepe, E., 3435.
Berge, S., 2721.
van den Berghe, L., Vincke, I. H., Chardome, M. & van den Bulcke, M., 1330.
Berger, J. See Innes, J. R. M. et al., 315.
Bergner, A. D. See Durlacher, S. H. et al, 846.
Bergonizi, M. See Bonaduce, A., 636.
Berqvist, S. & Packalén, T. H., 642.
Bergsma, C., 1626.
Bergstrand, C. G., 225.
Berke, Z. & Golem, S. B., 3589, 3590.
—. See also Golem, S. B., 3596.
Berlin, B. S. See Loosli, C. G. et al., 2896.
Bernard, C., page 272, 2864.
— & Greene, H. C., 2726.
Bernard, Cl. See Donatien, A. et al., 2865.
Bernard, R. See Demers, J. M., 473.
Bernard, R. M. & Odell, L. D., 1849.
Berne, R. M. & Levy, M. N., 558.
Bernheimer, A. W. & Ruffier, N. K., 3518.
—. See also Stollerman, G. H. et al., 3619.
Bernkopf, H., 279, 1357.
Bernstein, J. See Hamre, D. et al., 19.
—. See also Pansy, F. et al., 18.
Bernstein, S. See Medlar, E. M. et al., 3460.
Berousek, E. R. See Madden, F. W. et al., 3734.
Berry, E. G., Nolan, M. O. & González, J. O., 436.
Berry, G. P. See Syverton, J. T. et al., 451, 781, 782.
Bertani, L., 322, 1403.
Bersin, T. & Beller, K., 2974.
Berthrong, M. See Rich, A. R. et al., 2127.
Bessey, E. A., page 598.
Bessis, M., 1573.
—. See also Coombs, R. R. A. et al., 1401.
Bethard, W. F. See Pearl, A. et al., 3099.
Bethke, R. M. See Burroughs, W. et al., 145, 3299.
Bettelheim, F. R. See Bailey, K. et al., 3041.
Bettini, S. & Tentori, L., 1037.
Beutner, E. H. See Hillier, J. et al., 1937.
—. See also Mudd, S. et al., 1936.
Beveridge, J. M. R. See Abell, M. R., 1086.
—. See also Abell, M. R. et al., 1085.

Beveridge, W. I. B., 3406.
Bevis, D. C. A., 418.
Bezer, A. E. See Lumsden, C. E. et al., 1683.
Bézian, A. See Pautrizel, R. et al., 421, 2637.
Bhaduri, J. L., 2166.
Bhalerao, G. D., 2059.
Bhaskar, S. N. See Banks, S. O. et al., 2967.
Bhattacharya, P. See Roy, A. et al., 2416, 3088, 3374.
Bhattacharya, S. See Roy, A. et al., 2416, 3088, 3374.
Bianchi, E., 1641.
Biasini, R., 3414.
Bidwell, M. H. & Kelly, C. B., Jr., 232.
Bieling, R., page 191.
Bierman, H. R. See Morrow, P. L. et al., 557.
Biggart, J. H., 2667.
Biggers, J. D., Ingram, P. L. & Murray, C. B., 810.
Biggers, J. W., 199, 1894.
— & Ware, G. C., 523.
Bigland, C. H., 1931.
Billen, D. & Lichstein, H. C., 990.
Billing, B. H. See Wilkinson, A. W. et al., 2137.
Billingham, R. E. & Medawar, P. B., 785.
Binns, N. R., 3418.
Binns, W. See Hammond, D. M. et al., 999.
Binz, M. See Kästli, P., 2161.
Birkeland, J. M. See Brandt, N. G. et al., 1589.
—. See also Sandage, C. N. et al., 2827.
Birnie, J. H See Gaunt, R. et al., 2703.
Bischoff, A. I. See Rosen, M. N., 3598.
Bishop, D. W., Brown, F. A., Jr., Jahn, T. L., Wulff, V. J. & Prosser, C. L., 3120.
Bishop, L. K. See Howitt, B. F. et al., 81.
Bishop, L. W. J. See Barwell, C. F., 2903.
Bishop, P. M. F., Kennedy, G. C. & Wynn-Williams, 529.
—, Richards, N. A. & Perry, W. L. M., 2426.
—, — & Smith, D. J. N., 530.
Bishop, V. R. See Hammond, D. M. et al., 999.
Bishop, W. H., 945.
Bishton, R. L. & Rogers, G. H., 3098.
Biskind, G. R., Kordan, B. & Biskind, M. S., 467.
Biskind, M. S., 2368.
—. See also Biskind, G. R. et al., 467.
Bisset, K. A. & Hale, C. M. F., 2254.
Bittner, J J. See Huseby, R. A. et al., 460.
Bivins, J. A. See Beaudette, F. R. et al., 91.
Bjørneboe, M., Fischel, E. E. & Stoerk, H. C., 3614.
Black, D. J. G., Getty, J., Jameson, H. R. & Pirie, H., 507.
Black, F. W., 235.
Black, J. J. See Beaudette, F. R., 373.
Black, W. H., Ellis, N. R., Jones, J. M. & Keating, F. E., 2641.
—. See also Baker, A. L., 1547.
Blackshaw, A. W. See Emmens, C. W., 872.
Blair, G. W. S. See Clift, A. F. et al., 2150.
Blaisdell, K. F., 3644.
Blakemore, F. & Venn, J. A. J., 1433.
Blakeslee, L. H. See Luecke, R. W. et al., 1080.
Blakley, R. L. & Coop, I. E., 1797.
—. See also Coop, I. E., 512.
Blamire, R. V. See McCleery, E. F., 1047.
Blanc, G., 3424.
— & Bruneau, J., 2910.
—, — & Chabaud, A., 402.
—, — & Martin, L. A., 3235.
—, —, — & Maurice, A., 2042.
—, Martin, L.-A. & Bruneau, J., 2040.
—, — & Maurice, A., 401.
Blanc, R. A., 706, 708, 3207, 3210.
Blanchard, L., Pantaléon, J. & Poisson, J., 2737.
Blanchard, M. C., Stokes, J., Jr., Hampil, B., Wade, G. R. & Spizizen, J., 738.
—. See also Drake, M. E. et al., 1704.
Blanco, M. M., 1375.
Blattner, R. J. & Williamson, A. P., 2364.
Blaxland, J. D. & Blowers, A. J., 1942.
Blaxter, K. L., 174, 1790.
— & Allcroft, R., 173.
—, Reineke, E. P., Crampton, E. W. & Petersen, W. E., 3755.
—. See also Allcroft, R., 1792.
Bledinger, W., 3315
Bliss, E. A., Warth, P. T., Chandler, R. A. & Long, P. H., 1493.
—. See also Long, P. H. et al., 828.
—. See also Warth, P. T. et al., 520.
Blom, E., 1863, 1900.
Blomfield, A. M., Coombs, R. R. & Hole, N. H., 406, 2602.
Blood, B. D., 73, 384.
Bloom, F., Paff, G. H. & Noback, C. R., 2312.
Blore, I. C. See Olsen, C. et al., 2838.
—. See also Olson, C., Jr. et al., 92.
Bloss, J. F. E., 2610.
Blowers, A. J. See Blaxland, J. D., 1942.
Boardman, N. H., 2773.
Boddie, G. F., 905.
Bodin, S., 2288.
Bodingbauer, J., 2098, 2145, 2754, 2722.
de Bodo, R. C., Schwartz, I. L., Greenberg, J., Kurtz, M., Earle, D. P., Jr. & Farber, S. J., 3040.
Bøe, J., 645, 934, 1266.
— & Greaves, R. J. N., 3152.
Boe, N. See Gorham, J. R. et al., 2321.
de Boer, E. & Donker-Voet, J., 3242.
Boerner, F. See Sunderman, F. W., page 339, 2799.
van Bogaert, L. & Innes, J. R. M., 1102.
Bogart, R. See Mayer, D. T. et al., 2415.
Bogen, E., 195.
Boger, W. P., Pitts, F. W. & Gallagher, M. E., 834.
Bogoroch, R., 2451.
Bogoroditsky, A. V., 2882
Bohn, C. L. S., Landboe-Christensen, E. & Plum, C. M., 553.
Bohosiewicz, M., 1115.
Bohstedt, G. See Bowland, J. P. et al., 547.
—. See also Grummer, R. H. et al., 152, 228.
—. See also Hale, W. H. et al., 1073, 1772.
—. See also Meyer, J. H. et al., 1075.
Boissard, J. M. & Wormald, P. J., 6.
Boivin, A., 3523.
Bolduan, C. F. & Bolduan, N. W., page 191.
Bolduan, N. W. See Bolduan, C. F., page 191.
Bolene, C. See Stamler, J. et al., 1785.
Boley, L. E. See Johnson, B. C. et al., 2644.
—. See also Watts, R. E. et al., 963.
Bolin, D. W. See Bolin, F. M. et al., 1816.
—. See also Buchanan, M. L. et al., 153.
Bolin, F. M., Eveleth, D. F. & Bolin, D. W., 1816.
—, Goldsby, A. I. & Eveleth, D. F., 63.
—. See also Eveleth, D. F. et al., 941.
Bolle, W., 774.
Bolliger, A., Forbes, B. R. V. & Kirkland, W. B., 22.
—. See also Backhouse, T. C., 3194.
Bollman, J. L. See Mann, F. D. et al., 803.
Bolten, G. See Maksic, D., 2087.
Bolz, W., page 339, 3117.
Bonadonna, T., 1190.
Bonaduce, A. & Bergonizi, M., 636.
Bond, E. See Last, J. H. et al., 218.
Boney, W. A., Jr., 3484.
Bonfanti, C., 3035.
Bonfert, A., 248.
Bonfils, S. & Lambling, A., 1087.
Bonnycastle, D. D. See Belford, J., 179.
Bonser, G. M., 2267.
Bonsma, J. C., 3752.
Bonvallet, M., Dell, P. & Stitinsky, F., 2724.
Boogaerdt, A. See Van Royen, A. H. H., 217.
Booher, L. J. See Jones, B. J. et al., 2745.
Booker, C. G., 288.
Boquet, A., 1268.
Borchert, A., 2929.
— & Timm, W., 118.
Bordley, J. E., 1144.
Borecka, D., 3623.
Borgatti, G., 2715.
Borgen, L. O. & Gaustad, V., 2531.
Borg-Petersen, C., 2866.
—. See also Alston, J. M. et al., 2533.
Borison, H. L. & Brizzee, K. R., 3726.
Borisovich, F K., 3762.
Borkowska, S., 3624.
Bornstein, S., Rautenstein, A. & Moses, E., 2592.
Borson, H. J. See Lepkovsky, S. et al., 3303.
Bosgra, O., 2468, 3170.
Bosman, S. W., Botha, M. L. & Louw, D. J., 1729.
Bosshart, J. K., 617.
Bossi, V., 1090.
Botha, M. L. See Bosman, S. W. et al., 1729.
Botija, C. S. & Loizelier, A. B., 2035.
Boto, R., 1314.
Bouckaert, J. H., 3682.
Boué, A., 511.
Bouderlique, J., 1295.
Boulanger, P. See Rice, C. E., 554.
Bouley. See Lucas, A. et al., 968.
Bouley, G. See Lucas, A. et al., 3455.
Bourdie, M. See Roubaud, E., 2876.
Bourg, R. & Simon, J., 589
Bourne, G. H., page 339.
Bouthilet, R. See Lepkovsky, S. et al., 3303.
Bouton, P. See Béchade, A., 869.
Bowen, C. V., 3087.
Bowers, J. Z., 1890.
Bowland, J. P., Grummer, R. H., Phillips, P. H. & Bohstedt, G., 547.
Boxer, G. E. See Hawkins, J. E., Jr., et al., 3329.
Boyd, D. M. & Casman, E. P., 2245.
Boyd, F. A. See Watts, N. P., 1046.
Boyd, G. A., Cassarett, G. W. & Williams A. I., 610.
Boyd, J. S. K., 3600, 3601.
Boyd, W. L. & Sellers, A. F., 246.
Boyden, S. V, 3620.
Boyer, J. & Tissier, 654.
Boyer, P. D. See Kachmar, J. F. et al., 1076
Boyns, B. M. See Knight, R. L., page 654, 2806.
Bracey, P., 2053.
Bracken, F. K. See Olsen, O. W., 113.
Bradbury, R. H., 311.
Brambell, F. W. R., Hemmings, W. A., Henderson, M. & Rowlands, W. T., 1028.
—, — & Rowlands, W. T., 1027.
Brandly, C A., 387.
—. See also Hanson, R. P. et al., 1699, 2890.
—. See also Winslow, N. S. et al., 734.
Brandt, F. A. See Martinaglia, G., 1410.
Brandt, N. G., Sandage, C. N. & Birkeland, J. M., 1589.
—. See also Sandage, C. N. et al., 2827.
Branion, H. D. See Barron, E. L. et al., 2843.
Branston, B., 2800, page 482.
Bratlie, O. See Buer, A. W., 2484.
Bratton, R. W. See Collins, W. J. et al., 3072.
—. See also Foote, R. H., 240, 241, 1194.
Bratzler, J. W., Loosli, J. K., Krukovsky, V. N. & Maynard, L. A., 801.
Braude, A. I. & Spink, W. W., 966.
—. See also Spink, W. W., et al., 668.
Braude, R., 1817.
—, Henry, K. M. & Kon, S. K., 2643.
—. See also Davis, V. E. et al., 806.
Braun, W., 671.
—. See also Cole, L. J., 971.
—. See also Goodlow, R. J. et al., 1947.
Bray, R. S. See Cruickshank, J. C., 2240.
Bray R. W. See Grummer, R. H. et al., 228.
Brazel, E., 1535.
Breed, R. S. See Buchanan, R. E. et al., 2536.
Breirem, K., Ender, F., Halse, K. & Slagsvold, L., 808.
Brennan, J. M., 2305.
—. See also Eklund, C. M. et al., 3556.

Breslin, D. See Rigdon, R. H. et al., 1992.
Bressou, C., 643.
Bretey, J. See Négre, L., 306.
Brew, J. D. & Dill, L. V., 202.
Brice, A. T. See Saylor, C. P. et al., 2447.
Brieskorn, C. H. See Lindner, A. F. et al., 1471.
Brigatti, C., 3741.
Briggs, G. M. See Milligan, J. L. et al., 1444.
Briggs, H. M. & Gallup, W. D., 255.
Brinck, P., 1032.
Briody, B. A., 369.
Brion, A., 2922.
—, Pellerat, J. & Castric, M., 2086.
Bristol, W. R., 3670.
de Brito Gutterres, J., 1049.
Brizzee, K. R. See Borison. H. L., 3726
Broadhurst, J., MacLean. M. E. & Saurino. V., 379.
Brobeck. J. R. See McDermott, W. V. et al., 532, 1520.
Brocard, H. See Bariety, M., 1265.
Broch. O. J. & Haugen, H. N., 2146.
Brock, W. E. See Farley, H. et al., 1101.
—. See also Foote, L. E. et al., 2905.
Brody, S., 1165.
—, Worstell, D. M., Ragsdale, A. C. & Kibler, H. H., 2695.
—. See also Kibler, H. H., 539.
—. See also Ragsdale, A. C. et al., 2387.
—. See also Thompson, H. J. et al., 540.
Brons, A. W., 2351.
Brooks, M. M., 565.
Brooksby, J. B., 3208.
Broom, J. C. See Alston, J. M. et al., 2533.
—. See also Campbell, A. M. G. et al., 329.
Broom, W. A., Gurd, M. R. & Harmer, G. L. M., 3322.
Brotherston, J. G., 3564.
—. See also Jamieson, S. et al., 47.
Brouse, E. M. See Olson, C., Jr. et al., 2039.
Brown, A. L., 1655.
Brown, D. J., 175.
Brown, F. A., Jr. See Bishop, D. W. et al., 3120.
Brown, G. C , 1179
—. See also Francis, T., Jr. et al., 96.
Brown, H. W., 443.
Brown. J. B. See Brown, B. J. et al., 2745.
Brown, J. W. See Hanson, R. P. et al., 2890.
Brown. S. O. See Saunders, B. G. et al., 798.
Browne, R. C., 2362.
Browning, C. H., 684.
Browning, G. B. See Eichwald, E. J. et al., 784.
Brownlee, A., 1096, 2454.
Brownlee, G. & Short. E. I., 1809.
Bru. See Nanta et al., 1061, 2952.
Bruce-Chwatt, L. J. & Ooi, K. H., 426.
Bruce, H. M., 2438.
— & Parkes, A. S., 257.
Bruce, W. N. See Sternburg, J. et al., 425.
Brueckner, A. L. See Reagan, R. L. et al., 1018.
Brueck, J. W. & Buddingh, G. J., 2861.
Brueckner. A. L. See Reagan, R. L. et al., 2915.
Brüning, P. See Behrens, H., 3027.
Brues, A. M., 191.
Bruhn, P A., 319.
Brumpt. E. & Chabaud, A.-G., 111.
Bruneau, J. See Blanc, G., 2910.
—. See also Blanc, G. et al., 402, 2040, 2042, 3255.
Bruner, D. W. & Moran, A. B., 2507.
—. See also Dimock, W. W., 247.
Brunner, J. See Hess, E., 163.
Brunner, K. T. & Mayer, K. F., 2870.
Brunner, T. K., 1650.
Bruyère, A. & David, A., 3175.
Bruyere, P. T. See Howell, A., Jr. et al., 1960.
Bryan. C. S., 2461.
—. See also Jackson, W. F., 832.
Bryan, W. R., Lorenz, E. & Moloney, J. B., 1430.
—, Maver, M. E., Moloney, J. B., Wood, M. T. & White. C. L., 3288.
Bryer, M. S., Schoenbach, E. B., Wood, R. M. & Long, P. H., 965.
—. See also Long, P. H. et al., 828.
Brygoo, E., 450.
Buchanan, A. R. See Hill, R. M. et al., 3294.
Buchanan, M. L., Klosterman, E., Bolin, D. W. & Ford, K., 153.
—. See also Klosterman, E. W. et al., 2328.
Buchanan, R. E., St. John-Brooks, R. & Breed, R. S., 2536.
Bucher, N. L. R. & Glinos, A. D., 466.
—. See also Glinos, A. D. et al., 3660.
Buck & Quesnel, 1315.
Buck, M., 338.
Buckner, P. J. See Willet, E. L., 2414.
Bucy, C. B., 55.
Buddingh, G. J. See Brueck, J. W., 2861.
Büchi, J., Hurni, H. & Lieberherr, R., 1596.
Bueding, E., 773.
—. See also Epps, W. et al., 1060.
Bueno, R. C. See Nobrega, P., 1619.
Buer, A. W. & Bratlie, O., 2484.
Buettner, K., 1560.
Buettner, L. G. See Evans, J. B. et al., 1577.
van den Bulcke, M. See van den Berghe, L. et al., 1330.
Bull, L. B., Vasey, A. J. & Gamble, L. C., 3401.
Bullough, W. S. & van Oordt, G. J., 3359.
Bunnell, D. E. See Hutchings, L. M. et al., 3494.
Buntain, D. See Stuart, P. et al., 3470.
Bunting, H., 543.
Burch, G. E., Threefoot, S. A. & Ray, C. T., 1559.
van der Burg, W. B., 2668, 3382.
Burgess, R. See Common, R. H. et al., 2151.
de Burgh, P. M., Hoyle, A. R. & Metcalf, D. J., 2912.
Burgio, G. R. See D'Alessandro, G. et al., 1727.
Burke, R. C., 1291.
Burkey, L. A. See Meigs, E. B. et al., 1248.
Burkhart, R. L. See Cabasso, V. J. et al., 3580.
—. See also James, T. R. et al., 1360.
Burn, J. H., Finney, D. J. & Goodwin, L. G., 907.
Burnet, F. M., 370. 389, 1378, 2272, 2893.
— & Fenner, F., 3612.
— & Lind, P. E., 1698, 2273.
—, Stone, J. D. & Edney, M., 1026.
Burns, K. F., 2276, 3555.
Burns, M. & Auber, L., 3683.
Burr, M. See Polley, J. R. et al., 1358.
Burr, W. E., Dondero, N. C. & Jungherr, E. L., 1277.
Burrell, R. C. See Meites, S. et al., 2395.
Burri, K., 2716.
Burroughs, W., Edgington, B. H., Robinson, W. L. & Bethke, R. M., 3299.
—, Gall, L. S., Gerlaugh, P. & Bethke, R. M., 145.
Burrows, W., 2207.
Burstone, M. S., 2363.
Buruiana, L. M. & Indiceano, A., 1523.
Bush, D. L., 3408.
Bush, J. A. See Yuile, C. L. et al., 2080.
Bush, L. J., Ludwick, T. M., Ferguson, L. C. & Ely, F., 1196.
Bushland, R. C., Claborn, H. V., Beckman, H. F., Radeleff, R. D. & Wells, R. W., 2408.
—. See also Radeleff, R. D., 824.
Busvine, J., page 482.
Busvine. J. R., 2301.
— & Tew, R. P., 427.
—. See also Tew, R. P. et al., 2687.
Butaye, R., 1909, 2469.
Butcher, H. R. See Paine, R. et al., 1109.
Butler, C. A., 592.
Butsch, A. & Stünzi, H., 1966.
Buxton, A. See Smith, H. W., 3480.
Buxton, P. A., 1726, 2611.
Byrne, J. L. See Gwatkin, R. et al., 3684.
Byrne, M. J., 2084.

C

Cabasso, V. J., Burkhart, R. L. & Leaming, J. D., 3580.
Cabassu, H. See Giraud, P. et al., 3525.
—. See also Ranque, J. et al., 1310.
Cable, R. M., page 598.
Cabral, A., 3216.
Cabrera, D. J., 340.
Caldwell, E. R., Jr., Spies, H. W., Wolfe, C. K., Lepper, M. H. & Dowling, H. F., 3016.
—. See also Lepper, M. H. et al., 1807.
Calero, M. C. & Ortiz, O. P., 1739.
Calisti, V., 2421.
—. See also Illari, G., 223.
Call, R. A. See Gilbert, R. A. et al., 1131.
Callaghan, J. B. See Davis, W. D., Jr. et al., 3037.
Callahan, E. J. See Merrill, J. P. et al., 562.
Callot, J., Vermeil, C. & Puech, J., 746.
Calvó Fonseca, R., 3544.
Calzada, V., 701.
Cameron, G., page 272, 3127.
Cameron, G. R., De, S N. & Sheikh, A. H. 3689.
Cameron, T. W. M., page 653.
Caminopetros, J., 2595.
Camou. See Zottner et al., 3632.
Campbell, A. M. G., Macrae, J., Manderson, W. G., Sumner, K. C. & Broom, J. C., 329.
Campbell, B., Porter, R. M. & Petersen, W. E., 1832.
Campbell, C. C. & Saslaw, S., 1961, 2250.
—. See also Saslaw, S., 1645, 2525.
Campbell, D. J., Andrews, F. N. & Christian, J. E., 2725.
Campbell. G. S. See Hemingway, A., 2361.
Campbell, I. L., Hollard, M. G. & Flux, D. S. 1826.
Campbell, J. See Adler, H. E. et al., 2030.
Campion, R. L., 1673.
Campillo, C., 1677.
Canet, J. & Jahan, P., 2068.
Canham, A. S. See Stephan, S. A. R. et al., 2501.
Cannon, P. R., Frazier, L. E. & Hughes, R. H., 2325.
Cantello, J. E., 1856.
Caparo, A. C., 2659.
Capobianco, M., 238, 1370.
Caputi, F., 1599.
Carey, R. A., Harvey, A. M. & Howard, J. E., 1145.
—, —, — & Wagley, P. F., 1142.
—, —, — & Winkenwerder, W. L., 1143.
Carlisle, J. M., 2126.
Carlström, B., 3306.
— & Carlström, N., 1756.
Carlström, N. See Carlström, B., 1756.
Carmichael, J. & Maclay, M. H., 1595.
Carne, H. R. See Wickham, N., 1671.
Carpenter, K. J., Phillipson, A. T. & Thomson, W., 1123.
Carpenter, L. E. & Lundberg, W. O., 2333.
—. See also Teague, H. S., 2329.
—. See also Young, G. A., Jr. et al., 368.
Carrère, L. & Quatrefages, H., 1949.
Carillo Cárdenas, C., Ordóñez & Ruiz Castañeda, M., 960.
Carrol, H. T., 2211.
Carruthers, C. & Suntzeff, V., 134.
Carter, B. N. See Woods, A. C., Jr. et al., 3721.
Carter, C. W. & Thompson, R., 627.
Carter, G. R., 942.
Carter, H. B. See Riek, R. F. et al., 1068.
Cartwright, G. E., Palmer, J. G., Hitchings, G. H., Elion, G. B., Gunn, F. D. & Wintrobe, M. M., 488.
—, —, Tatting, B., Ashenbrucker, H. & Wintrobe, M. M., 3301.
— & Wintrobe, M. M., 2968.

Cary, W. See Hartman, T. L. et al., 1251.
Casals, J., Anslow, R. O. & Selzer, G., 2899.
Casarosa, L. See Mariotti, P., 3576.
Casida, L. E. & Wisnicky, W., 245.
—. See also Cheng, P. et al., 224.
—. See also Ghosh, D. et al., 242.
—. See also Tanabe, T. Y., 2749.
—. See also Wiggins, E. L. et al., 1545, 3081.
Casman, E. P. See Boyd, D. M., 2245.
Cason, J. E. See McManus, J. F. A., 850.
Cass, W. A. See Neter, E. et al., 3160.
Cassamagnaghi, A. & Cassamagnaghi, A. (h.), 719.
Cassamagnaghi, A., Jr., 3633.
—. See also Cassamagnaghi, A., 719.
Cassarett, G. W. See Boyd, G. A. et al., 610.
Cassidy, H. G. et al., 2732.
Cassou, R., 1189.
Castañeda, M. R., 1285.
Castagnoli, B. & Antonelli, G., 316.
Castelo, M., 1583.
Castor, W. C. & Baker, B. L., 1499.
Castric, M. See Brion, A. et al., 2086.
Cateigne, G. & Fauconnier, B., 2894.
Cater, D. B., 3289.
— & Lawrie, N. R., 864.
Cathie, I. A. B. & MacFarlane, J. C. W., 1600.
Cavalieri, L. F. See Sigiura, K. et al., 133.
Cavallito, C. J. See Bailey, J. H., 1128.
Cawein, M. J. See Hansen, M. F. et al., 2138.
—. See also Todd, A. C. et al., 2309.
Cazenave, M., 724.
Ceccaldi, J., Trinquier, E., Pellissier, A. & Arnoult, H., 1308.
Ceccarelli, A. & Fontanelli, E., 3515, 3516.
Cello, R. M. See Dougherty, R. W., 2111.
Cena, M. & Courvoisier, P., 251, 870.
Ceppellini, R. See Parvis, D., 674.
Cercós, A. P., 3017.
Chabaud, A. See Blanc, G. et al., 402.
Chabaud, A.-G. See Brumpt, E., 111.
Chailleux, D., 863.
Challice, C. E. See Flewett, T. H., 3585.
Chamberlain, R. W., 2130.
Chambers, P. C., 900.
Chandler, C. A. See Long, P. H., et al., 828.
—. See also Warth, P. T. et al., 520.
Chandler, L. U., 3678.
Chandler, R. A. See Bliss, E. A. et al., 1493.
Chang, E., 1747.
Chang, H. See Dolman, C. E. et al., 49.
Chang, K. & Stafseth, H. J., 953.
Chang, M. C., 849.
Chaplin, H., Jr., Clark, L. D. & Ropes, M. W., 3673.
Chapman, G. H., 1.
Chapman, J. B. See Skipper, H. E. et al., 129, 2317.
Chapman, M. See Rhodes, A. J., 1022.
Chapman, M. P., 26.
Charbonner, R. See Vallée, A., 3.
Chardome, M. See van den Berghe, L. et al., 1330.
Chargaff, E. & Saidel, H. F., 1594.
Charles, G., 1780, 2419, 2420.
Charton, A. See Lesbouyries, G., 486.
—. See also Robin, V. et al., 3014.
Chauncey, H. H. See Seligman, A. M. et al., 2383.
Chavance, J. See Chavance, M., 1139.
Chavance, M. & Chavance, J., 1139.
Cheatum, E. L., 1515.
—. See also O'Roke, E. C., 442.
Cheever, F. S., Daniels, J. B. & Hersey, E. F., 1687.
—. See also Pappenheimer, A. M. et al., 1688.
Cheldelin, V. H. See Feis, I. G., 178.
Cheng, P., Ulberg, L. C., Christian, R. E. & Casida, L. E., 224.
Cheng-Lee, H. See Elberg, S. S., 1620.
Chenoweth, M. B., 2671.
Chernin, E. & Sadun, E. H., 67.
Chesney, G., 2253.
Chevrier. See Zottner et al., 3632.
Cheyre, P., 1091.
Chieffi, A., Paiva, O. M. & Veiga, J. S., 3754.
Chiffelle, T. L. & Putt, F. A., 2448.
Childress, W. G. See Spain, D. M. et al., 2231.
Childs, T., 2197.
Chiu, C. Y. & Needham, D. M., 2704.
Chodkowski, A., 1247.
— & Lancaster, J. E., 1578.
Choquette, L. P. E., 345.
—. See also Rao, N. S. K., 2308.
Christ, Y. S. See Gillespie, H. B. et al., 404.
Christensen, G. C., 3046.
Christensen, N. O. & Schambye, P., 3679.
Christensen, R. See Simonsen, M., 1392.
Christian, J. E. See Campbell, D. J. et al., 2725.
Christian, R. E. See Cheng, P. et al., 224.
Christoph, H. J., 3318.
Chu, H.-J. See Ho, E. A. et al., 3197.
Chvátal, O. See Harnach, R. et al., 83.
Cileziz, A., 3217.
Cilli, V., 720.
Cinader, B. & Pillemer, L., 830.
Cioglia, L., 2755.
Ciordia, H. & Johnston, N. C., 1879.
Claborn, H. V., Beckman, H. F. & Wells, R. W., 3057, 3366.
—. See also Bushland, R. C. et al., 2408.
Claiborne, H. A. See Stewart, W. B. et al., 2081.
Clancy, C. F. See Duncan, G. G. et al., 2119.
Clapham, P. A., 767, 1724.
Clarenburg, A. & Vink, H. H., 1624.
—, — & Schuurmans, R., 1627.
Clark, A. L. McK., 3413.
Clark, C. F. See Kilham, B. J. et al., 44.
Clark, E. M. See Rhodes, A. J. et al., 97.
Clark, J. C. See McDuffie, W. C. et al., 2930.
Clark, J. H. See Waletzky, E. et al., 2880.
Clark, L. C., Jr., 3405.
Clark, L. D. See Chaplin, H., Jr. et al., 3673.
Clark, L. H. See Russ, S. et al., page 654.
Clark, R., 854, 3353.
— & Lombard, W. A., 3355.
—, Oyaert, W. & Quin, J. I., 3354.
— & Quin, J. I., 3356.
—. See also Oyaert, W. et al., 3352.
—. See also Quin, J. I. et al., 3351.
Clarke, N. A. See Melnick, J. L. et al., 2013.
Clarke, P. M. See Baxter, E. S. et al., 1207.
Clarke, R., 580.
Clavieras, J. See Cordier, G. et al., 728.
Clawson, B. J., 917.
Clay, A. C. See Clay, M. G., 3144.
Clay, M. G. & Clay, A. C., 3144.
Clift, A. F., Glover, F. A. & Blair, G. W. S., 2150.
Clifton, C. E., 2208, page 339.
—, Raffel, S. & Barker, H. A., 1569, page 191.
Cline, W. A. See Meads, M. et al., 1935.
Cluver, E. H., 2764.
Coates, M. E. See Davis, V. E. et al., 806.
Coatney, G. R. See Lastra, I., 2881.
Coaton, M. G. H., 1188.
Coburn, D. R. & Morris, J. A., 1629.
Coceani, A. & Solinas, N., 2520.
Cochran, T. H. See Rich, A. R. et al., 1818.
Cockrill, W. R., 3729.
Cohen, S. G., 2047.
Cohen, S. S. & Arbogast, R., 740.
Cohn, C. See Wolfson, W. Q. et al., 1846.
Cohn, E. G., 1180.
Cohn, M. L. See Corper, H. J., 1930.
Colby, R. W., Cunha, T. J. & Warwick, E. J., 1768.
—, Rau, F. A. & Couch, J. R., 1767.
—, — & Dunn, R. C., 1765.
Cole, B. A., 1000, 1666.
Cole, C. G. & Henley, R. R., 1364.
—. See also Dale, C. N. et al., 3568.
Cole, C. R., 3446.
—. See also Goss, L. W. et al., 1014.
Cole, E. L. See Fay, R. W. et al., 2369.
Cole, L. J., 1632.
— & Braun, W., 971.
Cole, R. K., 128.
—. See also Goodwin, K. et al., 2172.
Coleman, V. R. See Gunnison, J. B. et al., 2376.
—. See also Jawetz, E. et al., 3015.
Colglazier, M. C., 1489.
Colglazier, M. L. & Enzie, F. D., 3636.
Collier, W. A., 2572, 3595.
—, Polak, M. F. & Verhaart, W. J. C., 2031.
Collins, D. L. & Nardy, R. V., 2931.
Collins, H. H., 3412.
Collins, W. F. & Wild, H., 2999.
Collins, W. J., Bratton, R. W. & Henderson, C. R., 3072.
Collombier, M. See Kolochine-Erber, B., 2867.
Colombel, J., 590.
Comar, C. L. See Hansard, S. L. et al., 3090.
Combiesco, D. & Dumitresco, N., 2041.
Combs, G. F. See Milligan, J. L. et al., 1444.
Cominotti, L. & Mantovani, G., 2904.
Comline, R. S., Roberts, H. W. & Titchen, D. A., 3350.
Common, R. H., Keefe, T. J. & Maw, W. A., 531.
—, — Burgess, R. & Maw, W. A., 2151.
Comroe, J. H., Jr., 632, page 59.
Conalty, M. L. See Barry, V. C. et al., 17.
Conley, B. E., 1473.
Conley, C. L., Ratnoff, O. D., Ellicott, C. E. & Hartmann, R. C., 853.
Conn, H. F., page 482.
Conn, J. K. See Skinner, H. L. et al., 2196.
Connell, R., 1322.
Conner, G. H., 3336.
Conochie, J. See Underwood, E. J. et al., 2078.
Conrad, H. R., Hibbs, J. W., Pounden, W. D. & Sutton, T. S., 141.
Constantinides, P. & Gordon, M. L., 2427.
Conte, H. S. V., Ferraz, C. C. & Falcão, H. R., 1675.
Converse, H. T. See Meigs, E. B. et al., 1248.
Conzemius. See Jussiant, A., 64.
Cook, R. H. See Olsen, C. et al., 2838.
—. See also Olson, C., Jr. et al., 2089, 3652.
Cookson, L. O. C., 1986.
Coombs, R. R. A., Gorius, J. & Bessis, M., 1401.
—. See also Blomfield, A. M. et al., 406, 2602.
—. See also Gleeson-White, M. H. et al., 1398.
—. See also Stoker, M. G. P. et al., 407.
Coons, A. H. See Hill, A. G. S. et al., 1721.
Coop, I. E., 3307.
— & Blakley, R. L., 512.
— & Drake, J. H., 3392.
— & McLeod, G. B., 533.
—. See also Blakley, R. L., 1797.
Cooper, I. S., 855.
Cooper, J. B., Morgan, C. L., Anderson, G. W. & Jones, J. C., 3166.
Cooper, R. M. See Ackert, J. E. et al., 2633.
Copisarow, M., 2312
Coppini, R., 50.
Corcoran, A. C. See Schaffenburg, C. et al., 1496.
Cordes, R., 2738.
Cordier, D. & Cordier, G., 2124, 2125.
Cordier, G., Clavieras, J. & Ounais, A., 728.
—. See also Cordier, D., 2124, 2125.
Cordier, R. L. See Latimer, H. B., 3720.
Cordiez, E., 3672.
Cordy, D. R., 52.
— & Gorham, J. R., 98, 3609.
Corkill, N. L., 1714.
Cornette, M., 3479.
Corper, H. J. & Cohn, M. L., 1930.
Corrêa, M. O. A. & Meira, J. A., 1299.
Correia Madeira, A., 778.
Correll, J. W. See Kellner, A. et al., 3692, 3693.
Corrias & Bass, E., 1316.
Corvisier, M. See Grimpret, J. et al., 3192.
Corwin, E. H. L., page 59, 2651.

Costa, A., 2622.
Cotchin, E., 3649.
—. See also Levi, M. L., 1296.
Cottew, G. S. See Simmons, G. C., 991.
Cottier, H., page 339, 2803.
Cottral, G. E. See Paterson, J. C., 1106.
Couch, J. See Saunders, B. G. et al., 798.
Couch, J. R. & German, H. L., 482.
—. See also Colby, R. W. et al., 1767.
Couréges, Louf, Petrov & Pallas, 725.
Courvoisier, P. See Cena, M., 251, 870.
Coussens, R., Peeters, G., Massart, L. & Sierens, G., 591.
—. See also Peeters, G. et al., 2717.
Cowan, I. McT., Hoar, W. S. & Hatter, J., 1067.
Cowan, S. T., 336.
Cowdry, E. V., page 339.
Cowen, D. & Wolf, A., 1995.
Cowgill, G. R. See Beck, E. M. et al., 2969.
Cowie, A. T., 2718, 3738.
Cowing, R. F. See Fogg, L. C., 2452.
Cowles, P. B. & Klotz, I. M., 2692.
Cox, H. R. See Wong, S. C., 2295.
Craigie, E. H., 3360.
Crampton, E. W. See Blaxer, K. L. et al., 3755.
Craplet, C., 1897, page 191.
Cravens, W. W. See Sunde, M. L. et al., 805.
Creskoff, A. K., 1486.
Crevier, M., D'Iorio. A. & Robillard, E., 2128.
Crisler, O. S. See Merilan, C. P. et al., 3136.
Cristol, P., page 191.
Crivellari, C. A. & Mendy, R. M., 1738.
Crliacq, C. See Eckell, O. A. et al., 944.
Croisier, R., 1886.
Croissant, O. See Lépine, P. et al., 2574.
Cronin, M. T. I., 1402.
—. See aso Farrelly, B. T. et al., 419.
—. See also Kearney, W. et al., 923.
Cronkite, E. P., 1222.
Cronly, H., 2199.
Crossman, J. V., Dodd, F. H., Lee, J. M. & Neave, F. K., 912.
Croucher, H. H., 2416, 3417.
Crowdus, D. H. See Todd, A. C. et al., 438, 439, 2309.
Crowley, P., 1121.
Crowson, C. N. See Rice, C. E., 754.
Cruickshank, C. N. D. & Squire, J. R., 1125.
Cruickshank, J. C., 2239.
— & Bray, R. S., 2240.
— & Smith, H. W., 653.
Cruz, W. O., Da Silva, E. M. & Pimenta de Mello, R., 2167.
Cuboni, E., 631.
Culbertson, C. G. See Powell, H. M., 74.
Culbertson, J. T. See Gellhorn, A. et al., 1126.
Culik, R. See Luecke, R. W. et al., 1080.
Cullity, M., Hood, J. C. & Needham, K., 572.
Culpepper, G. H. See Babers, F. H., 1033.
Culwick, A. T See Fairbairn, H., 2546.
Cummings, M. M. See Richmond, L., 3149.
—. See also Sheldon, W. H. et al., 2230.
Cunha, T. J. See Colby, R. W. et al., 1768.
—. See also Edwards, H. M. et al., 2323.
Cunningham, C. H. See Loomis, L. N. et al., 1020.
Cunningham, I. J, 477, 3665.
Cupps, P. T. See Howell, C. E., 1841.
Curasson, G., 1202.
— & Mornet, P., 2547.
Curbelo, A. & Marquez, V., 1652.
Curd, F. H. S. & Davey, D. G., 1309.
Curnen, E. C. See Melnick, J. L. et al., 393.
Curnow, D. H., Robinson, T. J. & Underwood, E. J., 2649.
Curran, S., 148.
Currie, E. J., 3750.
Custer, R. P., 1572.
Cuthbertson, W. F. J., 3304.
—, Free, A. A. & Thornton, D. M., 478.
Czáky, T. Z. See Beard, D. et al., 2316.

D

Dabrigeon, J. See Verge, J. et al., 638.
Daccord, A. See Benoit, A., 3758.
Dafaalla, N. See Priestley, F. W. et al., 987.
Dahm, P. A., Fountaine, F. C. & Pankaskie, J. E., 2366.
—, —, —, Smith, R. C. & Atkeson, F. W., 2157.
Dale, C. N., Schoening, H. W., Cole, C. G., Henley, R. R. & Zinober, M. R., 3568.
Dale, H., 1481.
Dalgaard-Mikkelsen, S., Karlshoj, K. & Szabo, L. ,2853.
Dalling, T., 1255, 1943.
Dalrymple-Champneys, W., 35, 36.
Dalton, A. J., Kahler, H., Striebich, M. J. & Lloyd, B., 3724.
Dam, H. See Granados, H., 1161.
—. See also Granados, H. et al., 1070.
van Dam, R. See Wolff, J. W. et al., 3511.
Damgaard, E. See Ungar, G., 2393.
Damon, S. R. & Scruggs, J. H., 970.
—. See also Gay, K., 1634.
Dana, A. S. See Johnson, B. C. et al., 3302.
Daniels, J. B. See Cheever, F. S. et al., 1687.
—. See also Pappenheimer, A. M. et al., 1688.
Danielson, I. S. See de Mello, G. C. et al., 2852.
Danielyan, S. G., 3297.
Dantschakoff, V., page 191.
Darcy, A. E. & Petersen, W. E., 1865.
Darguzas, V. See Staffe, A., 1004, 2567.
Darlington, C. W. & Mather, K., page 191.
Darraspen, E., Tapernoux, A. & Vuillaume, R., 1793.
Dart, G. See Prier, J. E., 3597.
Das, J. See Rao, S. B. V. et al., 2959.
Dascomb, H. E. See Syverton, J. T. et al., 451, 781, 782.
Daubney, R. 1098.
—, Mansi, W. & Zahran, G., 1368.
Daudel, 2258.
Daudel, R. See Jean, R., 1422.
Davenport, F. M. & Francis, T., Jr., 3550.
Davenport, H. A. See Lhotka, J. F., 2449.
—. See also Porter, R. W., 3096.
Davenport, H. E., 447, 555.
Davey, D. G. See Curd, F. H. S., 1309.
David, A. See Bruyère, A., 3175.
David, W. A. L. See Tew, R. P. et al., 2687.
Davidson, I. & Stern, K., 1720.
Davidson, J. N., page 191, 3781.
Davie, R. See Tennant, R. et al., 516.
Davies, D. V. See Davies, J., 1509.
Davies, J., 1510, 2147.
— & Davies, D. V., 1509.
Davies, O. L. See Hurst, E. W., 3028.
Davies, R., 822.
Davis, B. D. & Mingioli, E. S., 994.
Davis, C. L. & Anderson, W. A., 1367
— & Kemper, H. E., 3282.
Davis, G. E., 2532.
Davis, G. K. See Shirley, R. L. et al., 1759.
Davis, H. A., 2990.
Davis, J., 818.
Davis, J. B., Mattman, L. H. & Wiley, M., 3498.
Davis, J. C., Jr. See Montgomery, A. V. et al., 2149.
—. See Swann, H. G. et al., 2148.
Davis, J G., 571.
Davis, V. E., MacVicar, R., Ross, C. B., Whitehair, C. K., Heidebrecht, A. A., Braude, R., Coates, M. E., Henry, K. M., Kon, S. K., Thompson, S. Y. & Wilby, F., 806.
Davis, W. D., Jr., Segaloff, Z., Jacobs, W. S. & Callahan, J. B., 3037.
Davison, C. See Miller, Z. B. et al., 2155.
Davoli, R. & Signorini, L. F., 2919.
Dawe, E. C. S., 1239, 2772.
Dawson, F. L. M., 2401.
De, N. N. See Srinivasan, V. R. et al., 3530.
De, S. N. See Cameron, G. R. et al., 3689.
Deane, H. W. See Hill, A. G. S. et al., 1721.
Dearborn, E. H., 2554.
Decourt, P. See Pelloux, A., 760.
Dedashey, Y. P., 2266.
DeEds, F. See Wilson, R. H., 1789.
Deinhardt, F., 1777.
van Deinse, F. & Sénéchal, F., 647, 3462.
—, Seys, R. & Macholda, F., 1267.
Delahant, A. B. See Vorwald, A. J. et al., 1607.
Delak, M., 444.
DeLamater, E. D., 996.
—, Wiggall, R. H. & Haanes, M., 1649.
—. See also Kligman, A. M. et al., 2443.
Delanoë, E., 1470.
Delaplane, J. P., 390, 391.
—. See also Grumbles, L. C. et al., 699.
Delaude, A. See Karlson, A. G. et al., 598.
Delaune, E. T. & Mayhew, R. L., 1413.
Delauney,A., Foucquier, E. & Lebrun, J., 3706.
—. See also Robineaux, R. et al., 1882.
Delay, P. D., Lennette, E. H. & DeOme, K. B., 747.
Delbarre, F. See Richet, C., 795.
Dell, P. See Bonvallet, M. et al., 2724.
Delorme, E. J., 2117.
Delpy, L. P., 722, 1730, 2885.
Delville, J. P. & Jezierski, A., 2002.
—. See also Jezierski, A., 2003, 2004.
Demers, J. M. & Bernard, R., 472.
Demirer, F. See Muslu, Z. et al., 2495.
Demirer, T. See Gören, S. et al., 2237.
Demnitz, A. & Schneider, B., 3586.
Denison, A. B., Jr. See Green, H. D. et al., 1218.
Dennell, R., 2050.
Denning, D. G. & Pfadt, R. E., 2303.
Denstedt, O. F. See McKerns, K. W., 1716.
Dent, J. H. See Derbes, V. J. et al., 2229.
Denton, C. See Franklin, W. et al., 845.
Denz, F. A., 2997.
Deom, J., 686, 1303.
DeOme, K. B. See Delay, P. D. et al., 747.
—. See also Julian, L. M., 2720.
DeOng, E. R., Peer, K. C. & Fancher, L. W., 2436.
Derbes, V. J., Dent, J. H., Weaver, N. K. & Vaughan, D. D., 2229.
Dérébéré, M., page 339.
Deringer, M. K. See Barrett, M. K., 3657.
—. See aso Heston, W. E. et al., 783.
Derivaux, J. See Liégeois, F., 1435, 3575.
Dern, R. J. & Pullman, T. N., 1220.
Derbordes, J., page 339 3431.
—. See also Paraf, J., 931.
Desoutter, 20.
Desowitz, R. S., 697, 3198.
Desruisseaux, G. See Roche. J., 3047.
DeTray, D. E. See Manthei, C. A. et al., 957.
Detroux, P. See Nélis, P. et al., 666.
Deutsch, H. F. See Marshall, M. E., 1848.
Devakula, M. R. S., 1348.
DeVolt, H. M., 1323.
Devos, A. See Geurden, L. M. G., 3165.
—. See also Geurden, L. M. G. et al., 3243.
Dewey, J. E. See Pimentel, D., 2303.
Dewhirst, L. W. See Ackert, J. E. et al., 2633.
Dhayagude, R. G. & Purandare, N. M., 1958.
Dhers, V., Roche, L. & Tolot, F., 1477.
Diagne, L. See Mornet, P. et al., 1979.
Diaz, S. E., 2706.
Dible, J. H., 3321.
Dick, G. W. A., 77, 78.
—, Smithburn, K. C. & Haddow, A. J., 76.
Dickerson, G. E. See Kampschmidt, R. F. et al., 3074, 3076.
Dickinson, E. M. See Osebold, J. W. et al., 3158.
Diczfalusy, E., Holmgren, H. & Westman, A., 1538.
— & Westman, A., 2168.
Dienes, L., Weimberger, H. J. & Madoff, S., 1280.
Diephuis, F. & Dunn, C. L., 185.

Diercks, F. H. See Traub, R. et al., 403.
Diernhofer, K., 1494, 2656, 2669.
—. See also Wirth, D., page 60, 3116.
Dietz, O. See Schmidt K. et al., 2411.
Dijkstra, J. M., 3537.
Dikmans, G. & Mapes, C. R., 1419.
—. See also Bartlett, D. E., 1990.
Dill, L. V. See Brew, J. D., 202.
Dilling, W. J., page 653.
Dimick, M. K. See Lepkovsky, S. et al., 3303.
Dimitropoulos, E., 587.
Dimock, W. W. & Bruner, D. W., 247.
Dinger, J. E. See Wolff, H. L., 2848.
Dinter, Z. & Bakos, K., 3587.
Dinusson, W. E. See Klosterman, E. W. et al., 2328.
Djaenoedin, R., 1918.
—. See also Kraneveld, F. C., 1618, 1662, 2542, 3323.
Djourichitch, M. See Filipovitch, D., 14.
Dmochowski, L., 3662.
— & Millard, A., 1065.
—. See also Passey, R. D., 2954, 2955.
Dobberstein, J., page 59, 2466.
Dobbs, E. M. & McIntyre, R. W., 3445.
Dobrokhotov, A. M. See Skryabin, K. I., 3369.
Dobrowolskaia-Zavadskaia, N., 2970.
Dobson, N., 87.
Dock, W., 3688.
Dodd, F. H. See Baxter, E. S. et al., 1207.
—. See also Crossman, J. V. et al., 912.
Dodds, E. C., 2639.
Dodge, H. R. See Howitt, B. F. et al., 51.
Dodson, M. E. See McGovern, V. J. et al., 2277.
Doeksen, J., Heringa, K. & Swierstra, D., 1045.
Dörnbrack, U. See Irrgang, K., 1910.
Dogra, J. R., 3219.
Dohan, F. C., Richardson, E. M., Stribley, R. C. & Gyorgy, P., 3743.
Doljanski, L. See Pikovski, M., 462.
Dol, E. R. & Hull, F. E., 3259.
—, McCollum, W. T. & Wallace, M. E., 729, 2289.
— & McGee, W. A., 3004.
— & Wallace, M. E., 2683.
—, — & Hull, F. E., 1133.
—, — & McCollum, W. H., 388, 1702.
—. See also Randall, C. C. et al., 2280.
Dolman, C. E., Chang, H., Kerr, D. E. & Shearer, A. R., 49.
Domagk, G., page 191.
Di Domizio, G., 2638, 3573.
Domonkos, J. See Huszák, I., 3701.
Donald, L. G. & Mann, S. O., 2.
Donaldson, E. & Waldron, D. H., 2892.
Donatien, A., Bernard, Cl. & Gayot, G., 2865.
—, Gayot, G. & Poul, J., 3184.
—. See also Sergent, Ed. et al., 2560.
Dondero, N. C. See Burr, W. E. et al., 1277.
Dong, L. See Faber, H. K. et al., 2036.
Donigiewicz, K., 1008.
Donker-Voet, J. & Kurjana, R., 1701.
—. See also de Boer, E., 3242.
Donnelley, M. See Fazekas de St. Groth, S., 1683, 2010, 2011, 2012.
Donohue, W. L. See Rhodes, A. J. et al., 97.
Donovick, R., Pansy, F., Stryker, G. & Bernstein, J., 18.
—. See aso Hamre, D. et al., 19.
Dooneief, A. S. See Rothbard, S. et al., 924.
Doormè, H., 3370.
Dordick, I. L., 2696.
Dorin, E. See Mesrobeanu, L. et al., 2538.
Dornhurst, A. C. & Sharpey-Schafer, E. P., 1840.
van Dorssen, C. A., 3164.
—. See also Jansen, J. et al., 1783.
Doss, M. A. See Hassall, A. et al., 3432.
Dougherty, E. C., 116, 117.
Dougherty, R. W. & Cello, R. M., 2111.
Dougherty, T. F. & Schneebeli, G. L., 2380.
—. See also Hayes, S. P. et al., 2921.
Douglas, D. M., Ghent, W. R. & Rowlands, S., 3694.
Douglas, S. W., 3650.
Dowling, H. F. See Caldwell, E. R., Jr. et al., 3016.
Downie, A. W., 3547.
— & McCarthy, K., 3222.
— & Macdonald, A., 1679.
—. See also Bedson, S. P. et al., page 653.
—. See also Macdonald, A., 3221.
Downie, H. G., 1842.
Downing, C. W., 3171.
Downing, V. See Leiter, J. et al., 2075.
Doyle, L. P., 1287.
—, Andrews, F. N. & Hutchings, L. M., 1149.
Doyle, T. M. & Spears, H. N., 2831.
Dózsa, L., 3394.
Drahn, F., 3001.
Drake, J. H. See Coop, I. E., 3392.
Drake, M. E., Kitts, A. W., Blanchard, M. C., Farquhar, J. D., Stokes, J., Jr. & Hene, W., 1704.
—. See also Henle, W. et al., 1703.
Draper, H. H. & Johnson, B. C., 2340.
Driesen, W., Grün, L. & Rummel, W., 1135.
Drieux, H., Jouve, F., Thiéry, G. & Dumont, L., 1108.
— & Thiéry, G., 3048.
Van Drimmelen, G. C., 1944, 3491.
Drysdale, A., 230.
Dschounkowsky, E., 2558.
Dubin, I. N. & Yen, C. K., 3531.
Dubos, R. J., 101, page 272, 1597, 3111.
— & Middlebrook, G., 3151.
— & Nouffiard, H., 1591.
Dubreuil, G. & Baudrimont, A., page 191.
Duckworth, J. & Ellinger, G. M., 1437.
Dudley, F. J. See Temperton, H. et al., 347.
Düwer, I., 1342.
DuFour, E. H. See Tukey, J. W. et al., 302.
Dufrenoy, J. See Pratt, R., 626.
Dugal, L.-P., 2991.
Duguet, J., 758.
Dumaresq, J. A. & Wherrett, A. B., 1762.
Dumitresco, N. See Combiesco, D., 2041.
Dumont, L. See Drieux, H. et al., 1108.
Duncan, C. W. See Sarkar, B. C. R. et al., 1835.
Duncan, D. C. See McClymont, G. L. et al., 3089.
Duncan, G. G., Clancy, C. F., Wolgamot, J. R. & Beidleman, B., 2119.
Duncan, P. R., Thomas, A. E. & Tobin, J. O'H., 2918.
Dunlap, J. S., Hawkins, P. A. & Nelson, R. H., 1325.
Dunlop, G., 147.
Dunn, C. L. See Diephuis, F., 185.
Dunn, P. See Polya, J. B., 1427.
Dunn, R. C. See Colby, R. W. et al., 1765.
Dunn, T. B. See Andervont, H. B., 3658.
—. See also Heston, W. E. et al., 783.
Dunoyer, M. See Levaditi, C. et al., 1344.
Duran-Reynals, F., 786.
Durieux, C., 1968.
Durlacher, S. H., Banfield, W. G., Jr. & Bergner, A. D., 846.
Duthie, R. C. See Mitchell, C. A., 1585.
Duthy, B. L., 3011.
Dvoskin, S., 878.
Dworski, M. See Vorwald, A. J. et al., 1607.
Dybing, O., 1153.
Dye, J. A. See McCandless, E. L., 1160.
van Dyke, H. B. See Maynert, E. W., 2679.
Dyrendahl, I., 3733.
Dzenis, L. See Gwatkin, R., 3482, 3483.
Dzhilovyan, K. A. See Koroleva, V. P. et al., 3501.

E

Eads, F. E., 2287.
—. See also Hsuing, G.-D. et al., 815.
Eakin, R. E. See Williams, R. J. et al., page 272, 3436.
Earle, D. P., Jr. See de Bodo, R. C. et al., 3040.
Earle, I. P., 1557.
Earle, W. R., Schilling, E. L. & Shelton, E., 136.
East, J., 2976.
Easterbrooks, H. L., Heller, P., Plastridge, W. N., Jungherr, E. L. & Elliott, F. I., 1862.
— & Plastridge, W. N., 2248.
Easterling, L. See Sure, B., 2971.
Eastoe, R. D. & Godlee, A. C., 254.
Eaton, O. N., 2439.
Ebi, Y. See Tabuchi, E. et al., 2584.
Echenique, L., 3503.
Eckell, O. A., Criiacq, C. & Garagarz, J., 944.
Eckert, E. A. See Beard, D. et al., 2316.
Eddie, B. See Karrer, H. et al., 392.
—. See also Meyer, K. F., 1633.
Eddy, G. W. See McDuffie, W. C. et al., 2930.
Edelman, I. S. See Schloerb, P. R. et al., 2132.
Edgar, G., 922, 1781.
Edgington, B. H. See Burroughs, W. et al., 3299.
Edmonds, E. V., 1136.
Edmondson, J. E. See Merilan, C. P. et al., 3136.
Edney, M. See Burnet, F. B. et al., 1026.
Edward, D. G. ff., 330, 1361.
Edwards, C. M. See Rowlands, W. T., 939.
Edwards, H. M., Cunha, T. J., Meadows, G. B., Sewell, R. F. & Shawver, C. B., 2323.
Edwards, J., 3342
Edwards, J. T. See Alston, J. M. et al., 2533.
Edwards, L. C., 1069.
Edwards, P. See Meyer, S. N. et al., 3456.
Edwards, P. R. See Wright, M. L., 952.
Edwards, S. J., 635.
—, Hughes, D. L. & Taylor, J. I., 2475.
— & Taylor, J. I., 2477.
Edwards, W. H. See Wilson, W. O., 1549.
Eedy, B. N., 956.
van Eekelen, M. See van der Kaay, F. C. et al., 2331.
Eggert, E., 3496.
—. See also Marcuse, K., 3497.
Eggert, O. K., 2217.
Eggerth, A. H., 926.
Ehrlich, R., 1927.
Eichwald, E. J., Evans, R. G. & Browning, G. B., 784.
Eisa, E. A., 3343.
Eisele, C. W. See McCullough, N. B. et al., 32.
Eisenstark, A. See Roberts, E., 655.
Ejrup, B., 495.
Eklund, C. M., Bell, J. F. & Brennan, J. M., 3556.
Elam, G. W. See Todd, A. C. et al., 2943.
Elberg, S. S. & Gheng-Lee, H., 1620.
— & Silverman, S. J., 670.
Eldridge, D. See Grunberg, E., 2238.
Elek, S. D. & Levy, E., 2221.
Eltman, H., Kaunitz, H. & Slanetz, C. A., 2335.
Elion, G. B. See Cartwright, G. E. et al., 488.
Ellicott, C. E. See Conley, C. L. et al., 853.
Ellinger, G. M. See Duckworth, J., 437.
Elliott, F. I. See Easterbrooks, H. L. et al., 1862.
Elliott, G. V. See Minnich, V. et al., 2342.
Elliott, S. D., 681.
Ellis, G. H. See Keener, H. A. et al., 1072.
Ellis, M. B., 3759.
Ellis, N. R. See Black, W. H. et al., 2641.
Elmore, F. H. See Rosenthal, S. R., 3178, 3179.
Elsasser, T. H. See Sweet, J. D. et al., 3702.
Elsden, S. R. & Sypesteyn, A. K., 2141.
Elvehjem, C. A. See Sunde, M. L. et al., 805.
—. See also Whitehair, C. K. et al., 156.
Ely, F. See Bush, L. J. et al., 1196.
Ely, J. O. & Ross, M. H., 1119.

Ely, R. E. See Sarkar, B. C. R. et al., 1835.
Emmens, C. W., 1539, 2526.
— & Blackshaw, A. W., 872.
Emmerie, A. See van der Kaay, F. C. et al., 2331.
Ender, F. See Breirem, K. et al., 808.
Endrejat, E., 114, 2983.
Enesco, M. See Androdias, A. et al., 823.
Engbaek, H. C. See Teilum, G. et al., 3020.
Engel, A., 978.
Engel, H. See Goss, L. W. et al., 1014.
Engfeldt, B., 3053.
—. See also Engström, A., 2994.
Engström, A. & Engfeldt, B., 2994.
Enigk, K., 3272.
Ensminger, M. E. See Ham, W. E. et al., 2996.
—. See also Lehrer, W. P., Jr. et al., 3677.
Enzie, F. D. & Kurtpinar, H., 865 .
—. See also Colglazier, M. L., 3636.
Ephrati, P., 3185.
Epps, W., Weiner, M. & Bueding, E., 1060.
Epstein, B. & Gurri, J., 3209.
Er, I. E., 2226.
Erb, R. E., Scott, G. W., Jr., Norton, C. L. & Morrow, K. S., 1440 .
Erber, M. See Kraneveld, F. C. et al., 2841.
Ercegovac, D., 2487.
Erdöi, Z., 2845, 3226.
Ergün, H. See Kurtpinar, H. et al., 3279.
Erhardt, 768.
Erhardt, A., 124.
Erlington, J. D. & Ivers, S. W., 2056.
Ershov, V. S., 1412.
Eschenbrenner, A. B. & Miller, E., 2315.
Esh, G. C. See Sutton, T. S., 3291.
Esin, I. See Altan, Y., 3313.
—. See also Muslu, Z. et al., 2495.
—. See aso Vardar, A. E., 2514 .
Eskildsen, P., Götzsche, H. & Tybjaerghansen, A., 1168.
Espersen, E., 3145.
Espín, J. See Vogelsang, E. G., 1300.
D'Esposito, L., 127.
Euzéby, J. & Lainé, B., 3647.
Evans, C. A., 394.
Evans, D. G., Perkins, F. T. & Gaisford, W., 3363
Evans, E. E. See Bartholomew, J. W. et al., 3190.
Evans, E. T. R. & Evans, W. C., 187.
—. See also Evans, W. C., 2676.
Evans, G. O. See Pollard, E. P. et al., 1743.
Evans, H. M. See Moon, H. D. et al., 456.
—. See also Nelson, M. M., 483.
Evans, J. B., Buettner, L. G. & Niven, C. F., Jr., 1577.
Evans, J. T. R., 2256.
Evans, L. D. See Sheldon, W. H. et al., 2230.
Evans, R. A. See Evans, W. C. et al., 1453.
Evans, R. G. See Eichwald, E. J. et al., 784.
Evans, R. J. & Spooner, E. T. C., 809.
Evans, W. C. & Evans, E. T. R., 2676.
—, Jones, N. R. & Evans, R. A., 1453.
—. See also Evans, E. T. R., 187.
Evans, W. R., 2778.
Eveleth, D. F., 2327.
—, Bolin, F. M., Goldsby, A. I. & Holm, G. C., 941.
—. See also Bolin, F. M. et al., 68, 1816.
Everett, J. W. See Sawyer, C. H. et al., 877.
Everist, S. L., 1858.
—. See also Kenny, G. C. et al., 510.
Eversole, W. J. See Gaunt, R. et al., 2703.
Ewer, T. K., 1438, 3671.
— & Sinclair, D. P., 3277.
Ewy, Z., 1298.
Ezcurra, R. See Rottgardt, A. A., 705.
Ezekiel, W. N., 3105.

F

Faber, H. K., Silverberg, R. J., Luz, L. A. & Dong, L., 2036.
Fabriani, G., Fratoni, A. & Spadoni, M. A., 1450.
Fabricant, C. See Knaysi, G. et al., 1593.
Faccincani, F. See Tavoni, V., 2849.
Faddoul, G. P. & Ringrose, R. C., 1795.
Fagonde, A. P. See Jurado, F. R., 3147.
Fairbairn, D. & Reesal, M. R., 2948.
Fairbairn, H. & Culwick, A. T., 2546.
Fairbrother, R. W., 2206.
Falcão, H. R. See Conte, H. S. V. et al., 1675.
Fancher, L. W. See DeOng, E. R. et al., 2436.
Farber, S. J. See de Bodo, R. C. et al., 3040.
Farleigh, E. A., 1642.
Farley, H., Foote, L. E., Pearson, C. C., Brock, W. E. & Kliewer, I. O., 1101.
Farquhar, J. D. See Drake, M. E. et al., 1704.
Farr, L. E., Jr. See Ferry, R. M. et al., 1552.
Farrelly, B. T., Belonje, C. W. A. & Cronin, M. T. I., 419.
—. See also Kearney, W. et al., 923.
Farris, E. J., 2801, page 653.
Fauconnier, B. See Cateigne, G., 2894.
Faustini, R., 1908.
Favour, C. B. See Long, J. B., 1819.
Fay, R. W., Cole, E. L. & Simmons, S. W., 2369.
Fazekas de St. Groth, S. & Donnelley, M., 1683, 2009, 2010, 2011, 2012.
Federer, K. E., 360.
Fedrigo, G., 876.
Feigenbaum, A. & Landau, J., 2252.
Feinberg, S. M., 1483.
Feinstein, R. N., 461.
Feldman, W. H., Hutchinson, D., Schwarting, V. & Karlson, A. G., 639.
—. See also Karlson, A. G. et al., 1263.
Feldman-Muhsam, B., 430.
Felix, A., 3606.
Fell, H. B. & Mellanby, E. M., 479.
Feller, A. E. See Jordan, W. S. et al., 1017.
Fels, I. G. & Cheldelin, V. H., 178.
Felsenfeld, O., Volini, I. F., Ishihara, S. J., Bachman, M. C. & Young, V. M., 1491.
—, Young, V. M., Loeffler, E., Ishihara, S. J. & Schroeder, W. F., 1948.
Feng, L. C., Lin, C., Ting, H. C. & Hwang, J. C., 2626.
Fenner, F. See Burnet, F. M., 3612.
Fenstermacher, R. & Kernkamp, H. C. H., 2019.
Fenton, P. F. See Beck, E. M. et al., 2969.
Ferguson, J. H. See Lewis, J. H. et al., 847.
Ferguson, L. C. See Bush, L. J. et al., 1196.
—. See also Pounden, W. D. et al., 140.
Ferrando, R. See Goret, P. et al., 2840.
Ferrara, B., 3034.
Ferraz, C. C. See Conte, H. S. V. et al., 1675.
Ferreira, A. V. See Lbotka, J .F., 1881.
Ferry, R. M., Farr, L. E., Jr. & Hartman, M. G., 1552.
Field, H. I., 1274.
— & Sellers, K. C., 1971, 1972.
—. See also Alston, J. M. et al., 2533.
Field, R. A. See Hutt, F. B. et al., 249.
Fiennes, R. N. T.-W., 692, 3007, 3191.
Figueroa, J., 72.
Fildes, P., Woods, D. D., McIlwain, H., Work, T. S., Rydon, H. N., Rose, F. L., Walker, J., Albert, A. & Stacey, M., 2681.
Filer, L. J., Rumery, R. E., Yu, P. N. G. & Mason, K. E., 2648.
Filipovitch, D. & Djourichitch, M., 14.
Filmer, J. F., 3110.
Fincher, M. G., 2473.
Findlay, J. D. & Yang, S. H., 3338.
Finerty, J. C. & Meyer, R. K., 226.
Fink, R. M., page 59.
Fink, W. J. & Grunge, W. H., 2474.
Finke, L. See Westphal, A., 1332.
Finland, M. See Womack, C. R. et al., 2377.
Finney, D. J. See Burn, J. H. et al., 907.
Finzi, G., 2891.
Firehammer, B. D. See Seghetti, L., 1038.
Fischel, E. E., LeMay, M. & Kabat, E. A., 750.
—. See also Bjørneboe, M. et al., 3614.
Fischel, W., page 59.
Fischer-Gröbl, M., 3439, page 339.
Fish, C. H. & Spendlove, G. A., 2410.
Fisher, J. H. See Abell, M. R. et al., 1085.
Fisher, M. W., 15, 16.
Fisher, S., 3464.
— & Gregory, T. S., 3139.
Fishler, J. S. See Spain, D. M. et al., 2231.
Fishlock, C. W. L., 2776, 2777.
Fitzgerald, J. D. L. See McLean, C. R. et al., 3696.
Fitzhugh, O. G., Nelson, A. A. & Frawley, J. P., 506.
Fitzpatrick, M. J. See Ginsberg, A., 3467.
Fitzpatrick, R. J. See Schild, H. O. et al,. 2116.
Fitzpatrick, T. B. See Ulrich, J. A., 2859.
Flanagan, J. B. See McVay, L. V. et al., 695.
Fleck, L. & Szczygielska, J., 3622.
Fleš, D. See Muić, N. et al., 1488.
Flesch, P., 2693.
Flewett, T. H. & Challice, C. E., 3585.
Flindt-Hansen, E. See Nissen, N. I. et al., 2365.
Floch, G. & Abonnenc, E., 2615.
Florent, 1320.
Florent, A., 342, 998, 1991.
— & Godbille, M., 28.
— & Leunen, J., 1693.
Florey, M. E. See Sherris, J. C., 1906.
Florio, R., 677, 1138.
— & Gratecos, M., 434.
Flosdorf, E. W., page 272.
Flückiger, 11.
Flückiger, G., 2498, 3310.
Fluno, J. A. See Gouck, H. K., 2306.
Flux, D. S. See Campbell, I. L. et al., 1826.
Flynn, J. E., page 191, 2218, 3121.
Foard, M. See Bang, F. B. et al., 2024.
Fogedby, E., 1338.
— & Jacobsen, N., 1339.
Fogedby, E. F., 1005.
Fogg, L. C. & Cowing, R. F., 2452.
Foggie, A., 3602.
—. See also Lovell, R. et al., 1613.
Fogh, B., 3486.
Foley, E. J. & Lee, S. W., 1579.
Foley, R. J., 2949.
Follmann, E., 1298.
Fontana, V. P., 1737.
Fontanelli, E., 2937.
—. See also Ceccarelli, A., 3515, 3516.
Foot, A. S. See Baxter, E. S. et al., 1207.
—. See also Foot, F. H. et al., 1206.
Foot, F. H., Foot, A. S., Henriques, E. & Neave, F. K., 1206.
Foote, L. E., Brock, W. E. & Gallaher, B., 2905.
—. See also Farley, H. et al., 1101.
Foote, R. H. & Bratton, R. W., 240, 241, 1194.
Forbes, B. R. V. See Bolliger, A. et al., 22.
Forbus, W. D. See Margolis, G. et al., 165.
Ford, J., 3524.
Ford, K. See Buchanan, M. L. et al., 153.
Forenbacher, S., 2110.
Forman, B. See Woodruff, M. F. A., 1591.
Forssling, S., 1154
Forsythe, S. M., 277.
Fortner, J., 940.
Foster, A. O., 1324.
—. See also Schwartz, B. et al., 2607
Foster, J. W., 2464.
Foucquier, E. See Delauney, A. et al., 3706.
Foulkes, E. C. & Lemberg, R., 2134.

Fountaine, F. C. & Atkeson, F. W., 1766.
—. See also Dahm, P. A. et al., 2157, 2366.
Frame, J. See Noble, W. A., 2095.
Francis, J., 196, 2476.
—. See also Innes, J. R. M. et al., 315.
Francis, T., Jr., Brown, G. C. & Penner, L. R., 96.
— & Kurtz, H. B., 367.
—. See also Davenport, F. M., 3550.
Franke, H. See Lindner, A. F. et al., 1471.
Franklin, K. J., 287.
Franklin, L. See Green, H. D. et al., 1218.
Franklin, M.. Bean, W. B. & Hardin, R. G., 499.
—. See also Popper, H., 169.
Frankin, M. C., 791.
Frankin, R. See Mirick, G. S. et al., 1581.
Franklin, W., Denton, C. & Lowell, F. C., 845.
Fraps, R. M. & Olsen, M. W., 1548.
Fraser, A. S., 3340.
Fratoni, A. See Fabriani, G. et al., 1450.
Frawley, J. P. See Fitzhugh, O. G. et al., 506.
Frazer, M. L. See Bass, A. D. et al., 3331.
Frazier, L. E. See Cannon, P. R. et al., 2325.
Frederiks, H. H. J., 2565, 2566.
Free, A. A. See Cuthbertson, W. F. J. et al., 478.
Frei, W., 159, 904.
Freire, M. J., 883.
French, C. F. See Granett, P., 431.
French, E. L. See Ada, G. L., 2813.
French, R. C. See Lesley, S. M. et al., 2037.
Frens, A. M., 1071.
Fresen, O., 2820.
Freund, J., Lipton, M. M. & Morrison, L. R., 1030.
Freymann, M. W., Tamm, I. & Green, R. H., 2275.
Frick, L. P. See Traub, R. et al., 403.
Friant, M. & Perry, J., 3361.
Frickers, J., 2946.
Fridrichovszky, L. & Pellérdy, L., 2550.
Fried, K., 2100.
Fried, K. J., 2685.
Friedell, H. L. & Storaasli, J. P., 193.
Friedenwald, J. S., 1423.
Friedewald, W. F. See Overman, J. R., 3552.
Friedlander, H., Habermann, R. T. & Parr, L. W., 3440, 3469.
Friedlaender, M. H. G. See Randall, J. T., 3372.
Friedman, M. H. F. & Thomas, J. E., 1844.
Friedmann, R., 2135.
Frisk, A. R. See Lagergren, B., 1262.
Früs-Hansen, B. J. See Schloerb, P. R. et al., 2132.
Fruton, J. S. See Simmonds, S., 3521.
Fry, E. G. See McDermott, W. V. et al., 532, 1520.
—. See also Opsahl, J. C. et al., 3744.
Fujii, S. See Yamafuji, K. et al., 3255.
Fujita, A., Kaminishi, K., Tashiro, T., Yamazaki, K., Suganuma, J. & Kishida, T., 2382.
Fulton, A., 2775.
Fulton, J. F., 3722, page 272.
Fulton, R. A. See McBride, O. C. et al., 759.
Furlong, J. R., 597.
Furman, D. P. & Bankowski, R. A., 842.
— & Kurtpinar, H., 428.
Furtado, A. da R. See Leão, A. E. A., 983.
Fusillo, M. H. See Littman, M. L. et al., 1965.
Fust, B. & Grünig, P., 364.

G

Gadd, H. W., 2213.
Gaensler, E. A., Beakey, J. F. & Segal, M. S., 1129.
Gainer, J. H. See Karlson, A. G. et al., 1263.
Gaines, T. B. See Hayes, W. J. Jr., 2162.
Gaisford, W. See Evans, D. G. et al., 3363.
Galambos, R. See Rosenbluth, W. A. et al., 544.
Gale, E. F., page 482, 3776.
Galgan, M. W., Bell, J. M. & Spencer, E. Y., 1443.
Gall, L. S. See Burroughs, W. et al., 145.
Gallagher, M. E. See Boger, W. P. et al., 834.
Gallaher, B. See Foote, L. E. et al., 2905.
Gallia, F. See Rampas, J., 1684.
Galliard, H., 2940.
— & Mille, R., 772.
Gallina, L., 158.
Gallo, P. See Vogelsang, E. G., 1409.
Galloway, I. A., 3205.
Gallup, W. D. See Bell, M. C. et al., 2960.
—. See also Briggs, H. M., 255.
Galofré, E. J. & Rosa, W. A., 2066.
—. See also Morini, E. G., 3639.
Galpine, J. F., 2519.
Gamble, L. C. See Bull, L. B. et al., 3401.
Gan, J. See Argaud, R., 221.
Gan, K. H., 337.
Gant, J. Q. See Schwartz, L. et al., 981.
Garagarz, J. See Eckell, O. A. et al., 944.
Garbers, G. V. See Monteverde, J. J., 3481.
Garm, O., 1866.
— & Meschaks, P., 1541.
Garner, F. M. See Gorham, J. R., 1940.
Garner, R. J., 216, 475, 693, 1763, 2190.
Garrard, E. H. See Anderson, G. W. et al., 2842.
—. See also Barron, E. L. et al., 2843.
Garry, S. See Konorski, J., 2723.
Gartley, K. M. See Paterson, J. C. et al., 1104.
Gates, D. W. See Mott, L. O., 2563.
Gaud, M., 396.
Gaunt, R., Birnie, J. H. & Eversole, W. J., 2703.
Gaustad, V. See Borgen, L. O., 2531.
Gay, K. & Damon, S. R., 1634.
Gayot, G., 2020, 2559.
—. See also Donatien, A. et al., 2865, 3184.
Gazes, P. C. See Bellet, S. et al., 2354, 2355.
Geary, T., 1478.
Gebauer, O., 2634.
Geddes, H. J., 3398.
Geissler, S., 584.
Gell, P. G. H., 138.
Gellhorn, A., Rose, H. M. & Culbertson, J. T., 1126.
—. See also Shapiro, D. M., 2074.
Gelormini, N., 3641.
Gemmell, J. P. & Perry, W. F., 1850.
Gemzell, C. A. & Samuels, L. T., 545.
Generoso, J. D. & Mendoza, I. L., 1376.
Gentry, R. F. See Muhrer, M. E., 2713.
Gerhardt, L. P. See Hayes, S. P. et al., 2921.
Gerhardt, P., Levine, H. B. & Wilson, J. B., 1658.
—, Tucker, A. L. & Wilson, J. B., 1286.
Gerichter, C. B. See Kauffmann, F. et al., 3167.
Gerlaugh, P. See Burroughs, W. et al., 145.
German, H. L. See Couch, J. R., 482.
Gernez-Rieux, C., Sévin, A. & Spy, C., 3454.
— & Tacquet, A., 304.
—, — & Verschoote, G., 3463.
Geschickter, C. F. See Popovici, A. et al., 1074.
Gethin, R. H., 2434.
Getty, J. See Black, D. J. G. et al., 507.
Geurden, L. M. G. & Devos, A., 3165.
—, — & Mortelmans, J., 3243.
Gey, G. O. See Bang, F. B. et al., 3545.
Geyer, R. P. See Shoshkes, M. et al., 3295.
Ghent, W. R. See Douglas, D. M. et al., 3694.
Ghidini, G. M., 1732.
Ghosh, D., Casida, L. E. & Lardy, H. A., 242.
Gibbons, N. E. & Rose, D., 2159.
Gibson, A., 3764.
Gibson, J. M., 1178.
Gibson, T. E., 119.
Gifford, D., McKinley, F. & Hunter, C. A., 2821.
Gilbert, R. A., Call, R. A. & Roose, D. J., 1131.
Gillen, A. L. See Polley, J. R. et al., 1358.
Gillen, D. H. See Murray, R. G. E. et al., 652.
Gillespie, H. B., Steber, M. S., Scott, E. N. & Christ, Y. S., 404.
—, — & Waugh, M. H., 405.
Gillespie, J. M., Salton, M. R. J. & Scott, W. J., 3368.
—, Scott, W. J. & Vickery, J. R., 3062, 3063.
Gillis, M. B., 799.
Gilman, A. R., 2278.
Gilman, H. L., 659.
— & LeGrow, W. R., 2516.
—. See also Larsen, P. H., 321.
Gilman, J. W. P., 2986.
Gilmore, L. O., 879.
Ginsberg, A., 574.
— & Fitzpatrick, M. J., 3457.
Ginsberg, H. S., 1016.
— & Horsfall, F. L., Jr., 3583, 3584.
— & Wilson, A. T., 1023.
—. See also Horsfall, F. L., Jr., 3582.
Giolitti, G., 3540.
Giovannoni, M. & Kubiak, G. V. L., 1745.
Girard, H. & Mackowiak, C., 1998.
— & Rousselot, R., 3252.
Giraud, P., Ranque, J. & Cabassu, H., 3525.
de Girolamo, A., 3054.
Giroud, A. & Martinet, M., 858.
Gisatullin, K. G., 3397.
Gispen, R., 2044.
Gladstone, G. P., 3447.
Glässer, K., Hupka, E. & Wetzel, R., 3433.
— & Reuter, H., 2739.
Glasser, 2985.
Glatzel, H., 2085.
Glavind, J. See Granados, H. et al., 1070.
Gledhill, A. W., 1271.
Gleeson-White, M. H., Heard, D. H., Mynors, L. S. & Coombs, R. R. A., 1398.
Glenny, A. T. See Barr, M., 3615.
Glick, D. See Kelley, V. C. et al., 3697.
Glimstedt, G. & Hakansson, R., 3095.
Glinos, A. D., Bucher, N. L. R. & Aub, J. C., 3660.
—. See also Bucher, N. L. R., 466.
Gloag, J., page 653.
Glover, F. A. See Clift, A. F. et al., 2150.
Glover, R. E. See Lloyd, G. M. et al., 2285.
Gnedina, M. P., 1055.
Goble, F. C., 683.
Gochenour, W. S., Jr., Yager, R. H. & Wetmore, P. W., 984.
—. See also Yager, R. H. et al., 2088.
Gochnauer, T. A. & Wilson, J. B., 2223.
Godard, J., 494.
Godbille, M. See Florent, A., 28.
Godlee, A. C. See Eastoe, R. D., 254.
Goebel, A., 2598.
— & Seckfort, H., 2399.
Goebel, W. F. See Tal, C., 1938.
Goelea, J. P. See Sherry, S., 3714.
Gören, S., 3326.
—, Iren, Z. & Demirer, T., 2237.
Gogolak, F. M. & Weiss, E., 2024.
Goldberg, L., Gunvall, F., Hammarsten, G. & Lindgren, G., 1504.
Goldberg, L. J. See Shechmeister, I. L., 916.
Golden, F. See Smith, C. R. et al., 2233.
Goldfeder, A. & Albaum, H. G., 3659.
Goldhaber, P., Zacharias, L. & Kinsey, V. E., 1078.
—. See also Zacharias, L. et al., 1077.
Goldman, J., 143.
Goldsby, A. I. See Bolin, F. M. et al., 63.

—. See also Eveleth, D. F. et al., 941.
Goldsmith, L. See Komarov, A., 1708, 1709.
Golem, S. B., 2235, 2517, 2521, 2522, 2523, 3488, 3560.
— & Berke, Z., 3596.
—. See also Berke, Z., 3589, 3590.
—. See also Payzin, S., 2599.
Golubev, I. E., 959.
Goncharov, I. E., 3008.
González, J. O. See Berry, E. G. et al., 436.
Good, R. A. See Kelley, V. C. et al., 3697.
—. See also Stetson, C. A., 3617.
Goode, E. R. See Manthei, C. A. et al., 957.
Goodfellow, A. M. See Rhodes, A. J. et al., 97.
Goodlow, R. J., Mika, L. A. & Braun, W., 1947.
Goodman, R. D. See Lewis, A. E., 2392.
Goodman, S. N. See Taylor, E. S. et al., 135.
Goodwin, K., Hutt, F. B. & Cole, R. K., 2172.
Goodwin, L. G., 702.
— & Walls, L. P., 1987.
—. See also Burn, J. H. et al., 907.
Goodwin, T. W., 1439.
Goor, S., 300, 1343.
Goosen, P. J. See du Toit, R., 424.
Gordon, H. McL., 605, 2062, 2063, 2938.
— & Green, R. J., 3642.
Gordon, M. H., 2296.
Gordon, M. L. See Constantinides, P., 2427.
Gordon, W. A. M. See Lamont, H. G., 1006.
—. See also Lamont, H. G. et al., 1464.
—. See also Luke, D., 122, 2353.
Goret, P., 1257.
—, Ferrando, R. & Roumet, P., 2840.
— & Joubert, L., 675, 3506.
—, Lucam, F., Joubert, L. & Ridet, R., 54.
—. See also Martin, L. A. et al., 3233.
Gorham, J. R. & Baker, G. A., 950.
— & Garner, F. M., 1940.
—, Gracia, M. S. & Boe, N., 2321.
—. See also Cordy, D. R., 98, 3609.
—. See also Quortrup, E. R., 2854.
Gorius, J. See Coombs, R. R. A. et al., 1401.
Gorrie, C. J. R., 698.
Gorrie, R. H. See Howitt, B. F. et al., 81.
Gorzynski, G. A. See Neter, E., 1934.
—. See also Neter, E. et al., 3160.
Goss, L. W., Cole, C. R. & Engel, H., 1014.
Gottschewski, G., 3522.
Gotzsche, H. See Eskildsen, P. et al., 1168.
Gouck, H. K. & Funo, J. A., 2306.
Gouveia, P. F. See Jordão, L. P., 3746.
Grabar, P. See Staub, A. M. et al., 10.
Gracia, M. S. See Gorham, J. R. et al., 2321.
Gráf, F. See Haynal, E., 1469.
Graf, H. See Bekker, P. M. et al., 2686.
—. See also du Toit, R. et al., 2608.
Graham, A. F. See Lesley, S. M. et al., 2037.
Graham, F. See Warren, J. R., 1661.
Graham, R. See Alberts, J. O., 29.
Graham, R. M. et al., 625.
Granados, H. & Dam, H., 1161.
—, Glavind, J., Noer, B. & Dam, H., 1070.
Granelli, G., 712.
Granett, P. & French, C. F., 431.
Granoff, A., Liu, O. C. & Henle, W., 2916.
Granouillit, 704.
Grant, B. M. See Sherman, F. G., 3092.
Grasset, R. See Barotte, J., 1164.
Gratecos, M. See Florio, R., 434.
Gratzl, E., 1151.
Graubner, E., 1606.
Gray, D. F., 1776.
Gray, M. L., Stafseth, H. J. & Thorp, F. J., 2837.
—. See also Loomis, L. N. et al., 1020.
—. See also Webster, H. D. et al., 2090.
Gray, S. J. See Sterling, K., 3717.
Grayson, A. R., 56.
Greaves, H. See McClymont, G. L. et al., 3089.
Greaves, R. J. N. See Böe, J., 3152.
Greco, P. A. See Winter, A. R. et al., 1524.
Green, G. J. See Pady, S. M. et al., 2453.
Green, H. D., Denison, A. B., Jr., Franklin, L. & Wayne, H., 1218.
Green, H. N. & Stoner, H. B., page 191, 2216.
—. See also Stoner, H. B., 1521.
Green, R. & Mankikar, D. S., 1628.
Green, R. H. See Freymann, M. W. et al., 2275.
Green, R. J. See Gordon, H. McL., 3642.
Green, T. W. & Stein, L., 1283.
Greenberg, J. See de Bodo, R. C. et al., 3040.
Greenberg, L. D. See Rinehart, J. F., 2341.
Greene, H. C. See Bernard, C., 2726.
Greene, L. W., Jr. & Hesseltine, H. C., 600
Greenough, P. R. See Tazewell, E. R., 252.
Greenspan, E. M., Leiter, J. & Shear, M. J., 2076.
Greenspan, G. See Koerber, W. L. et al., 1387.
Greer, F. G. & Banks, P. N., 180.
Gregory, F. J. See Solotorovsky, M. et al., 2829.
Gregory, T. S. See Fisher, S., 3139.
Greig, J. R., 3228.
Greig, W. A. Se Watts, R. E. et al., 963.
Griffith, H. D. See Young, J. S., 3655.
Griffiths, R. B. & O'Rourke, F. J., 2621.
Griffitts, J. J. & Nock, W. S., 2923.
Grigg, G. W. See Skaller, F., 2429.
Grimm, M. R. See Plough, H. H. et al., 1630.
Grimpret, J., 353.
—, Corvisier, M. & Sadot, M., 3192.
Grini, O., 2810.
Grocott, R. G., 356.
Gröbl, T., page 191.
Gros, F., Macheboeuf, M., Rybak, B. & Lacaille, P., 829.
Groschke, A. C. See Waters, N. F. et al., 793.
Gross, W. B. See Johnson, E. P., 2917.
Grossman, J. D. See Pounden, W. D., 1831.
Grossman, M. I., 1174.
Groth, A. H. See Larsen, A. B. et al., 1269, 1609.
Groulade, 378.
Grün, L. & Scholtis, K., 1155.
—. See also Driesen, W. et al., 1135.
Grünig, P. See Fust, B., 364.
Gruenwald, P. & Mayberger, H. W., 168.
Grumbles, L. C., Delaplane, J. P. & Higgins, T. C., 699.
Grummer, R. H., Bentley, O. G., Phillips, P. H. & Bohstedt, G., 152.
—, Bray, R. W. & Bohstedt, G., 228.
—. See also Bowland, J. P. et al., 547.
—. See also Meyer, J. H. et al., 1075.
—. See also Wiggins, E. L. et al., 1545, 3081.
Grunberg, E. & Eldridge, D., 2238.
Grundy, F., page 654.
Grunge, W. H. See Fink, W. J., 2474.
Grunsell, C. S., 2191.
Grzimek, B., page 59.
Guadalupe de Ita, M. See León, A. P., 2605.
Gualandi, G., 1377.
Gubner, R., 3332.
Gucker, F. T., Jr. & O'Konski, C. T., 1551.
Günther, O., 2160.
Guérin, M. See Roussy, G. et al., 2640.
Guérin, P. See Roussy, G. et al., 2640.
Guerrett, M. See Mornet, P., 1863.
Guest, G. H., 2195.
Guilhon, J., 700, 837, 1057, 2618, 2690.
— & Rioux, J., 2984, 2985.
Guillot, G., Névot, A. & Thieulin, G., 3364.
Gullberg, S. & Vahtquist, B., 474.
Gullickson, T. W. See Kachmar, J. F. et al., 1076.
Gunderson, H., 498.
Gunn, F. D. See Cartwright, G. E. et al., 488.
Gunning, O. V., 186, 188, 326.
Gunnison, J. B., Coleman, V. R. & Jawetz, E., 2376.
—, Larson, A. & Lazarus, A. S., 3477.
—. See also Jawetz, E., 1815.
—. See also Jawetz, E. et al., 3015.
Gunvall, F. See Goldberg, L. et al., 1504.
Gurd, M. R. See Broom, W. A. et al., 3322.
Gurevitch, J. See Rozansky, R. et al., 943.
Gurri, J. See Epstein, B., 3209.
Guss, C. O. See Smith, C. R. et al., 2233.
Gusuinin, I. A., 2529.
Gustafson, D. P. & Moses, H. E., 3241.
Guthrie, F. See McVay, L. V. et al., 663.
Gutierrez, J. See Sieburth, J. McN. et al., 3012.
Gutscher, V. & Nufer, K., 1381.
Guyaux, R., 1302, 2877.
Gwatkin, R. & Dzenis, L., 3482, 3483.
— & Peart, A. F. W., 661.
—, Plummer, P. J. G., Byrne, J. L. & Walker, R. V. L., 3684.
Gye, W. E., 2953.
Gygax, P. A. See Nauta, W. J. H., 3097.
Gyorgy, P. See Dohan, F. C. et al., 3743.

H

Haanes, M. See DeLamater, E. D. et al., 1649.
Habel, K., 3220.
Habel, R. E., 628.
Habermann, R. T. See Friedlander, H. et al., 3440, 3469.
Habersang, 1273.
Hadaway, A. & Barlow, F., 2054.
Haddow, A. J. See Dick, G. W. A. et al., 76.
Hadengue, A., 1124.
Hänni, H., 3050.
Hässig, A., Karrer, J. & Pusterla, F., 1933.
Hafez, E. S. E., 1516.
Haggqvist, G. & Bane, A., 244.
Hahn, T., page 339.
Haig, D. A. & Lund, A. S., 1983.
Haller, E. & Heicken, K., 919, 920, 1916.
Hakansson, R. See Glimstedt, G., 3095.
Hale, C. M. F. See Bisset, K. A., 2254.
Hale, W. H., Pope, A. L., Phillips, P. H. & Bohstedt, G., 1073, 1772.
Hall, A. V., 3631.
Hall, H. T. B., 1236.
Hall, W. H. See Spink, W. W. et al., 668.
Hall, W. J., MacDonald, A. D. & Legenhausen, D. H., 954.
Halnan, E. T., 568.
Halpin, J. G. See Sunde, M. L. et al., 305.
Halse, K. See Breirem, K. et al., 808.
Halvorson, H. O. See Jezeski, J. J. et al., 857.
Ham, T. H., page 482.
Ham, W. E., Kline, E. A. & Ensminger, M. E., 2996.
Hamburger, C., page 191, 1899.
Hamelin, A. See Levaditi, C. et al., 3187.
Hamilton, C. M. See Jerstad, A. C. et al., 1021.
Hamilton, J. B. & Montagna, W., 541.
—. See also McLean, C. R. et al., 3696.
Hamilton, T. S. See Johnson, B. C. et al., 2644.
Hammarsten, G. See Goldberg, L. et al., 1504.
Hammond, C. W. & Novak, M., 751.
Hammond, D. M., Bishop, V. R., Jeffs, G. & Binns, W., 999.
Hammond, J., Jr., 2174.
Hammond, W. S. See Bass, A. D. et al., 3331.
Hampil, B. See Blanchard, M. C. et al., 738.
Hamre, D., Bernstein, J. & Donovick, R., 19.
Hancock, J., 1201, 2173, 3385, 3386, 3388.
Hancock, J. L., 3375.
Hankwitz, R. F., Jr. See Wharton, D. R. A. et al., 3656.

Hannah, R. See Weisberger, A. S. et al., 219.
Hannay, C. L., 1912.
Hansard, S. L., Plumlee, M. P., Hobbs, C. S. & Comar, C. L., 3090.
—. See also Hobbs, C. S. et al., 1870.
Hansel, W. & Asdell, S. A., 3742.
Hansen, A. & Holm, P., 3213.
Hansen, M. F., Todd, A. C., Kelley, G. W. & Cawein, M., 2138.
—, —, — & Hull, F. E., 1163.
—. See also Todd, A. C. et al., 437, 438, 439, 441, 2309.
Hansen, P., 3225.
Hansen, P. A. See Harrison, A. P., Jr., 1617.
Hansens, E. J. See Harris, H. J. et al., 3058.
Hanson, D. A. See Zuckerman, S. et al., 206.
Hanson, R. P., Rasmussen, A. F., Jr., Brandly, C. A. & Brown, J. W., 2890.
—, Winslow, N. S., Brandly, C. A. & Upton, E., 1699.
—. See also Winslow, N. S. et al., 734.
Harada, K. See Tubahara, H., 2577.
—. See also Yamamoto, S. et al., 2583.
Hardin, R. C. See Franklin, M. et al., 499.
Harding, H. P., 1317.
Hardman, P., 2846.
Hardy, M. H., 1518.
—. See also Riek, R. F. et al., 1068.
Hare, T., 2097.
Harmer, G. L. M. See Broom, W. A. et al., 3322.
Harms, H. F. & Langer, P. H., 1959.
Harnach, R., 2826.
—, Hubík, R. & Chvátal, O., 83.
Harris, B. A., Jr. See Hellman, L. M. et al., 1512.
Harris, C. M. See Meads, M. et al., 1935.
Harris, H. J., 278.
—, Hansens, E. J. & Alexander, C. C., 3058.
Harris, S. See Henle, W. et al., 1703.
Harris, T. N. See Henle, W. et al., 1703.
Harrison, A. P., Jr. & Hansen, P. A., 1617.
Harrison, C. M., 3630.
Harrison, J. L., 1887.
Hart, D. S., 2435.
Hart, G. H. See Rao, C. K., 239.
Hart, P. D'Arcy & Rees, R. J. W., 641.
Hartman, M. G. See Ferry, R. M. et al., 1552.
Hartman, T. L., Hoes, J. S. & Cary, W. 1251.
Hartmann, R. C. See Conley, C. L. et al., 853.
Hartnell, J. L. See Leiter, J. et al., 2075.
Hartwell, W. V. See Wiese, A. C. et al., 3300.
Harvey, A. M., 1141.
—, Howard, J. E. & Kattus, A. A., 1146.
—. See also Carey, R. A. et al., 1142, 1143, 1145.
Harvey, C., 1235.
Harvey, D. G. & Lovell, R., 314.
Harvey, W. C. & Hill, H., 3437, page 272.
Harwood, P. D. & Stunz, D. I., 3529.
Haslem, N. M. See Meads, M. et al., 1935.
Hass, G. M. See Schick, A. F., 1170.
—. See also Taylor, C. B. et al., 1467.
Hassall, A., Doss, M. A., Segal, D. B. & Ray, D. H., 3432.
Hatter, J. See Cowan, I. McT. et al., 1067.
Hatziolos, B. C. See Shaw, J. C. et al., 1755.
Hauck, E., 3709.
Hauduroy, P., 307, page 339, 2492.
— & Rosset, W., 2832.
Hauge, S., 1913.
Haugen, H. N. See Broch, O. J., 2146.
Hausam, W., 3138.
Hausmann, 2684.
Hawker, L. E., 2788, page 654.
Hawking, F., 771.
— & Lawrence, J. S., 1244.
—. See also Sewell, P., 1421.
Hawkins, J. E., Jr., Boxer, G. E. & Jelinek, V. C., 3329.
Hawkins, P. A. See Dunlap, J. S. et al., 1325.
Hay, G. K. B., 621.
Hay, J., 3268.
Hayden, J. W. See Yuile, C. L. et al., 2080.
Hayes, A. F. & Wright, G. M., 1646.
Hayes, M. H. & Tutt, J. F. D., 1246.
Hayes, S. P., Dougherty, T. F. & Gerhardt, L. P., 2921.
Hayes, W. J., Jr. & Gaines, T. B., 2162.
Haynal, E. & Gráf, F., 1469.
Heaf, H., 21.
Heagy, F. C. See Murray, R. G. E. et al., 652.
Heard, D. H., Hinde, I. T. & Mynors, L. S., 103.
—. See also Gleeson-White, M. H. et al., 1398.
Heathcote, J. G., 501.
Hecke, F., 3574.
Heckly, R. J., 2180.
Hediger, H. & Sircom, G., 1902.
Hedvall, E., 1920.
Hegler, C., page 191.
Heicken, K. See Hailer, E., 919, 920, 1916.
Heidebrecht, A. A. See Davis, V. E. et al., 806.
Heidrich, H. J., 2431.
Heimann, H. See Wolff, A. H., 2227.
Heiman-Holander, E. See de Vries, A. et al., 3344.
Heinle, R. W. See Weisberger, A. S., 2367.
—. See also Weisberger, A. S. et al., 219.
Heish, R. B., 986.
Heishman, J. O., 2479.
Heisler, C. See Skeggs, L. T., Jr. et al., 1219.
Heitman, H., Jr. & Hughes, E. H., 3389.
Held, R. See Mosonyi, L. et al., 1130.
Heller, P. See Easterbrooks, H. L. et al., 1862.
Hellerstein, H. K. & Liebow, I. M., 1217.
Hellman, L. M., Harris, B. A., Jr. & Andrews, M. C., 1512.
Helmy, I. D. See Nicol, T., 2423, 3381.
Hemingway, A., 2103.
— & Campbell, G. S., 2361.
—. See also Sellers, A. F., 3718.
Hemingway, H. See Ludlam, G. B., 2407.
Hemmert-Halswick, A., 1292.
Hemmes, G. D., 3485.
Hemmings, W. A. See Brambell, F. W. R. et al., 1027, 1028.
Hench, P. S., 3019.
Henderson, C. R. See Collins, W. J. et al., 3072.
Henderson, E. See Seneca, H., 2268.
Henderson, J. A. See Stewart, A. G. et al., 1479.
Henderson, J. L. See Tinne, J. E., 1923.
Henderson, M. See Brambell, F. W. R. et al., 1023.
Henderson, W. M., 2691, 2889.
Hendrickx, J. H. V., page 272, 2750.
Heney, J. W., 1353.
Henle, G. See Henle, W. et al., 1703.
Henle, W., Harris, S., Henle, G., Harris, T. N., Drake, M. E., Mangold, F. & Stokes, J., 1703.
—. See also Drake, M. E. et al., 1704.
—. See also Granoff, A. et al., 2916.
Henley, R. R. See Cole, C. G., 1364.
—. See also Dale, C. N. et al., 3568.
Hennig, W., page 191.
Henning, M. W., page 339.
Hennings, H., 3051.
Henrici, A. T., page 654.
Henriksen, S. D., 1211.
Henrikson, H. W., 3669.
Henriques, E. See Foot, F. H. et al., 1206.
Henry, K. M. See Braude, R. et al., 2643.
—. See also Davis, V. E. et al., 806.
Hepding, L., 2505.
Heringa, K. See Doeksen, J. et al., 1045.
Herman, H. A. See Kampschmidt, R. F. et al., 3074, 3076.
—. See also Madden, F. W. et al., 3734.
—. See also Merilan, C. P. et al., 3136.
—. See also Roark, D. B., 3378.
Herman, V. A., 3009.
Hermann, W., 433.
Herms, H., 3002.
Herms, W. B., page 654.
Hernanz, M., 1956.
Herrell, W. E. & Barber, T. E., 1635.
Herrick, J. B., 3080.
Herriott, R. M. See Tenbroeck, C., 2271.
Hersey, E. F. See Cheever, F. S. et al., 1687.
Herter, K, page 339.
Hertz, R., Allen, M. J. & Tullner, W. W., 2379.
Hertzberg, G., 1604.
Herz, N. See de Vries, A. et al., 3344.
Hess, E., 62.
— & Brunner, J., 163.
Hesse, N. C. W., 3006.
—. See also Beijers, J. A. et al., 2481.
Hesseltine, H. C. See Greene, L. W., Jr., 600.
Heston, W. E., Deringer, M. K., Dunn, T. B. & Levillain, W. D., 783.
Heukelekian, H. See Pramer, D., 3731.
—. See also Pramer, D. et al., 1592.
Hewetson, R. W. & Ruddle, R. P., 3402.
van Heyningen, W. E., page 339, 2787.
Heyse, E.-H. See Maassen, W., 2823.
Hibbs, J. W., 1445, 2347.
—. See also Conrad, H. R. et al., 141.
—. See also Pounden, W. D., 1066.
—. See also Pounden, W. D. et al., 140.
Hicks, S. P., 214. 2371.
Hidiroglou, M., 2857.
Higgins, C. C., 1784.
Higgins, T. C. See Grumbles, L. C. et al. 699.
Hignett, P. G., 3176.
Hilbert, K. F. & Kiser, J. S., 2503.
Hill, A. B. & Knowelden, J., 2290.
Hill, A. G. S., Deane, H. W. & Coons, A. H., 1721.
Hill, H. See Harvey, W. C., 3437, page 272.
—. See also Trautmann, A., 2394.
Hill, R., Widdowson, R. W. & Maggs, B. E., 885.
Hill, R. M., Holtkamp, D. E., Buchanan, A. R. & Rutledge, E. K., 3294.
Hillaert, E. L, Hutchings, L. M. & Andrews, F. N., 34.
Hillermark, K., 2472.
Hillier, J., Mudd, S., Smith, A. G. & Beutner, E. H., 1937.
—. See also Knaysi, G. et al., 1523.
—. See also Mudd, S. et al., 1936.
—. See also Smith, W. E. et al., 988.
—. See also Wuerthele-Caspe, V. et al., 1428.
Himmelweit, F., 395.
El Hindawy, M. R., 2140, 2988.
Hinde, I. T. See Heard, D. H. et al., 103.
Hindmarsh, W. L., 1852.
Hine, G. J. See Marinelli, L. D. et al., 826.
Hinshelwood, C., 3189.
—. See also Baskett, A. C., 3519.
Hipólito, O., 1455.
Hironaka, N. See Kobayashi, R. et al., 1009.
Hirsh, I. J. See Rosenbluth, W. A. et al., 544.
Hirt, R. & Hurni, H., 929.
Hitchcock, M. W S., Karvonen, M. H. & Phillipson, A. T., 1830.
Hitchings, G. H. See Cartwright, G. E. et al., 488.
—. See also Sigiura, K. et al., 133.
Hite, K. E. See Rothbard, S. et al., 924.
Hjärre, A. & Bakos, K., 1354.
Ho, E. A., Yuan, I.-C. & Chu, H.-J., 3197.
Hoar, W. S. See Cowan, I. McT. et al., 1067.
Hoare, C. A., 689, 2541.
Hoare, R. See Tuba, J., 3038.
Hobbs, C. S., Hansard, S. L. & Barrick, E. R., 1870.
—. See also Hansard, S. L. et al., 3090.
Hobday, J., 2774, 3421.
Hobson, A. D., 2627.
Hoch, J., 3385.
Hodgson-Jones, I. S., 2284.
Hoecker, F. E. See Roofe, P. G. et al., 614.
Hoedemaker, L., 3459.
Hoelzer, H. 582.

Hoerlein, B F., 766.
Hoes, J. S. See Hartman, T.L. et al., 1251.
Hoffman, R. A., Roth, A. R. & Lindquist, A. W., 757.
Hoffmann, E. See Wheeler, R. S., 797, 1140.
—. See also Wheeler, R. S. et al. ,1327.
Hoffmann, P. See Kühl, R. et al., 2600.
Hoffman-Ostenhof, O., 2133.
Hofkens, C., 3376.
Hoflund, S., 1843.
Hogan, A. G., O'Dell, B. L. & Whitley, J. R., 794.
—, Regan, W. O. & House, W. B., 3293.
—. See also Anderson, G. C., 142.
—. See also O'Dell, B. L. et al., 2973.
Hogarth, T. W., 1954.
Hoggarth, E., Martin, A. R., Storey, N. E. & Young, E. H. P., 930.
Hogreffe, G. & Pedersen, E., 2956.
Holdaway, C. W. See Mather, R. E. et al., 1758.
Hole, N. H. See Blomfield, A. M. et al., 406, 2602.
Hollander, D. H. See Turner, T. B., 1148.
Hollander, W. F. See Strong, L. C., 3654.
Hollard, M. G. See Campbell, I. L. et al., 1826.
Holm, G. C. See Eveleth, D. F. et al., 941.
Holm, H., 2534.
Holm, L. W. & McNutt, S. H., 41.
Holm, P., 3507.
—. See also Hansen, A., 3213.
Holman, H. H., 514.
—, Pattison, I. H. & Taylor, J. I., 634.
— & Wells, A. J., 2071.
—. See also Pattison, I. H., 3442.
—. See also Pattison, I. H. et al., 633.
Holmberg, J., 3168.
Holmes, J. R., 2961, 3305.
Holmes, J. W. H., 201.
Holmes, N. E. See Alford, L. R. et al., 3367.
Holmgren, H. See Diczfalusy, E. et al., 2538.
Holt, H. D., Maxted, W. R. & Schultze, E., 925.
Holtkamp, D. E. See Hill, R. M. et al., 3294.
Holz, K., 1580.
Holzer, F. J. & Stöhr, R., 1794.
Holzer, L., 658.
Honda, Y. See Kobayashi, R. et al., 1009
Honeker, 1461.
Honeker, A., page 59.
Honisch, K., 2710.
Hood, J. C. See Cullity, M. et al., 572.
Hopfengärtner, M., 1976.
Horley, J. F., 3763.
Hornby, H. E., 107.
Horne, C. H., 2675.
Hornibrook, J. W., 1876.
Horsfall, F. L. See Archetti, I., 2008.
Horsfall, F. L., Jr., 727, 3441.
— & Ginsberg, H. S., 3582.
—. See also Ginsberg, H. S., 3583, 3584.
—. See also Kilbourne, E. D., 3554.
Horstmann, D. M., Manuelidis, E. & Sprinz, H. 3572.
— & Melnick, J. L., 737.
Horton Smith, C., 1667, 3527.
Hosoda, T. & Kaneko, T., 1393.
—. See also Tabuchi, E. et al., 2580.
Hoster, H. A. See Hoster, M. S. et al., 1752.
Hoster, M. S., McBee, B. J., Rolnick, H. A., Van Winkle, Q. & Hoster, H. A., 1752.
Hougen, A. See Meyer, S. N. et al., 3456.
House, W. B. See Hogan, A. G. et al., 3293.
Housewright, R. D. & Thorne, C. B., 1252.
Hove, E. L., 2337.
Howard, F. A. See Paine, R. et al., 1109.
Howard, J. E. See Carey, R. A. et al., 1142, 1143, 1145.
—. See also Harvey, A. M. et al., 1146.
Howe, A. C. See Lewis, J. H. et al. 847.
Howell, A., Jr., Kipkie, G. F. & Bruyere, P. T., 1960.
Howell, C. E. & Cupps, P. T., 1841.
Howie, J. W. See Naftalin, J. M., 814.
Howitt, B. F., 2033.
—, Dodge, H. R., Bishop, L. K. & Gorrie R. H., 81.
Hoyer, B. H., 40.
Hoyle, A. R. See de Burgh, P. M. et al., 2912.
Hoyle, L., 2895.
Hoyt, A., deMontesquiou, M., Veldee, M. V. & Alburger, J. R., 1561.
—. See also Smith, C. R. et al., 2233.
Hruška, K., 723.
Hsuing, G.-D., Eads, F. E. & Stafseth, H. J., 815.
Hubík, R. See Harnach, R. et al., 83.
Huddleson, I. F., Sanders, E. & Mattano, L. A., 1487.
Hudson, A. L., 2104.
Hudson, J. R., 2015.
— & Wongongsarn, C., 2016.
Huebner, R. J. See Bell, J. A. et al., 1386.
—. See also Luoto, L. et al., 3604.
—. See also Ransom, S. E., 3605.
de la Huerga, J. See Popper, H. et al., 1787.
Huffman, C. F. See Webster, H. D. et al., 2090.
Hugaud, G. See Receveur, P., 99.
Hughes, D. L. See Edwards, S. J. et al., 2475.
Hughes, E. H. See Heitman, H., Jr., 3389.
Hughes, J. S. See Parrish, D. B. et al., 1834.
Hughes, L. E., 578.
Hughes, R. H. See Cannon, P. R. et al., 2325.
Hughes, T. P. & Perlowagora, A., 718.
Huisman, W., 3163.
Huitema, H., 1582.
Hulin, P., Robinet, A. H. & Rivière, R., 2635.
Hull, F. E. See Doll, E. R., 3259.
—. See also Doll, E. R. et al., 1133.
—. See also Hansen, M. F. et al., 1163.
—. See also Todd, A. C. et al., 437.
Hull, R. B. & Loosli, C. G., 2897.
—. See also Loosli, C. G. et al., 2896.
Hulse, E. C., 2809.
Hundley, J. M., 1434.
Hungate, R. E., 45.
Hunt, A. D., Jr. See Tashman, S. et al., 2120.
Hunt, J., page 339.
Hunter, C. A. See Gifford, D. et al., 2821.
Hunter, M. E., Mudd, S. & Woodburn, M. A., 909.
Hunter, W. M. D., McCarroll, P. J. & O'Moore, L. B., 150.
Hupka, E. See Glässer, K. et al., 3433.
Hurni, H. See Büchi, J. et al., 1596.
—. See also Hirt, R., 929.
Hurst, E. W. & Davies, O. L., 3028.
Hurst, H., 210.
Hurst, L. See Topley, E. et al., 1812.
Hurt, L. M., 2203.
Huseby, R. A., Barnum, C. P. & Bittner, J. J., 460.
Husman, C. N. See McDuffie, W. C. et al., 2930.
Huszák, I. & Domonkos, J., 3701.
Hutchings, B. L. See Whitehill, A. R., 519.
Hutchings, L. M., 33.
—, Bunnell, D. E. & Bay, W. W., 3494.
—. See also Doyle, L. P. et al., 1149.
—. See also Hillaert, E. L. et al., 34.
Hutchinson, D. See Feldman, W. H. et al., 639.
Hutson, L. R., 294, 2779, 3415.
Hutt, F. B., 3290.
—, Rickard, C. G. & Field, R. A., 249.
—. See also Goodwin, K. et al., 2172.
Hvidsten, H., 2729.
Hwang, J. C. See Feng, L. C. et al., 2626.
Hymas, T. A. See Peterson E. H., 2262.
Hynek, B., 1079.

I

Ide, M. & Sierens, G., 3316.
Ignatieff, V., 2164.
Ignesti, E. See Tassi, L., 3064.
Ikkin, B. Z., 3707.
Ileri, S. Z., 3239, 3244.
Illari, G. & Calisti, V., 223.
Imes, M. See Schwartz, B. et al., 2607.
Inaoka, M. See Yamafuji, K. et al., 3256.
Indiceano, A. See Buriana, L. M., 1523.
Infantozzi, C. M. See Vanni, V. et al., 1042.
Ingelman-Sundberg, A., 1537.
Ingram, M., 2158.
Ingram, P. L. See Biggers, J. D. et al., 810.
Innes, J., 465.
Innes, J. R. M., 181.
—, Berger, J. & Francis, J., 315.
—. See also Bogaert, L., 1102.
Ionescu, D., 2571.
D'Iorio, A. See Crevier, M. et al., 2128.
Iren, Z. See Gören, S. et al., 2237.
Irrgang, K. & Dörnbrack, U., 1910.
Irwin, J. O., 2404.
Isaacs, J. P. See Woods, A. C., Jr. et al., 3721.
Isaksson, A., 3312, 3663.
—, Kull, K. E. & Nordberg, B. K., 1371.
Isbir, S. See Pillet, J. et al., 293.
Ishihara, S. J. See Felsenfeld, O. et al., 1491, 1948.
Ishii, K. See Kobayashi, R. et al., 1009.
Ittner, N. R. & Kelly, C. F., 3069.
Ivanov, X., 2530.
Ivanova, V. I., 961.
Ivers, S. W. See Erlington, J. D., 2056.
Iversen, L., 3505.
Iyer, S. G. See Rao, S. B. V. et al., 2959.
Izsóf, Z., 1031.

J

Jackson, D. M., Lowbury, E. J. L. & Topley, E., 3478.
Jackson, W. F. & Bryan, C. S., 832.
Jacobs, K. See Nottbohm, H., 2689.
Jacobs, W. S. See Davis, W. D., Jr. et al., 3037.
Jacobsen, N. See Fogedby, E., 1339.
Jacobsohn, K. P., 2701.
Jacobson, L. O. See Pearl, A. et al., 3099.
Jacotot, H., 2017, 2027, 2045, 3579.
—, Vallée, A. & Le Priol, A., 735.
Jacox, R. F., 2121.
Jacquet, J., 3000.
Jacusiel, F., 1970.
Jahan, P. See Canet, J., 2068.
Jahn, T. L. See Bishop, D. W. et al., 3120.
Jahnel, J. See Koller, R., 874.
Jakubowski, S., 2511.
James, M. F. See Adamstone, F. B. et al., 2332.
—. See also Johnson, B. C. et al., 3302.
James, T. R. See Koprowski, H. et al., 1360.
Jameson, H. R. See Black, D. J. G. et al., 507.
Jameson, J. E., 3703.
Jamieson, S., 972.
— & Allcroft, R., 476.
— & Stuart, J., 296.
—, Thompson, J. J. & Brotherston, J. G., 47.
—. See also Stamp, J. T. et al., 743.
Jansen, J., 3451.
— & Kunst, H., 2594, 2815.
—, —, Van Dorssen, C. A., Van den Berg, H. A., Roepke, W. J. & Ten Thije, J. H., 1783.
Jareš-Goetz, J., 1404.
Jasper, D. E. & Lewis, J. S., 2856.
Jauffret, R., 1522.
Jaulmes, C., Jude, A. & Quérangal des Essarts, J., page 482, 3128.
Jawetz, E. & Gunnison, J. B., 1815.
—, — & Coleman, V. R., 3015.
—. See also Gunnison, J. B. et al., 2376.
Jaworski, Z. & Kowalewski, K., 2169.
Jean, R. & Daudel, R., 1422.

Jean-Blain, M., 3124.
Jeanpierre, C. See Launoy, L. et al., 997.
Jebson, J. L., 946.
Jeffries, H. See Warren, J. et al., 75, 1025.
Jeffs, G. See Hammond, D. M. et al., 999.
Jelinek, V. C. See Hawkins, J. E., Jr. et al., 3329.
Jellison, W. L. & Kohls, G. M., 1272.
Jenkins, D. W., 1728.
Jenkins, R. See Morrow, P. L. et al., 557.
Jennings, A. R., 776.
Jepsen, A. & Vindekilde, T., 3490.
Jerome, H. See Turpin, R. et al., 1774.
Jerstad, A. C., Hamilton, C. M. & Peterson, E. H., 1021.
Jervis, G. A. See Koprowski, H. et al., 1360.
Jezierski, A. & Delville, J. P., 2003, 2004.
—, Halvorson, H. O. & Macy, H., 857.
—. See also Delville, J. P., 2002.
Jflek, J., 1015.
Jirovec, O., 2551.
Joe, A. & Sangster, G., 3512.
Johns, A. T., 2873.
Johnson, B. C., Hamilton, T. S., Nevens, W. B. & Boley, L. E., 2644.
—, Mitchel, H. H., Pinkos, J. A. & Morrill, C. C., 2346.
—, Neumann, A. L., Nesheim, R. O., James, M. F., Krider, J. L., Dana, A. S. & Thiersch, J. B., 3302.
—, Wiese, A. C., Mitchell, H. H. & Nevens, W. B., 1442.
—. See also Draper, H. H., 2340.
—. See also Nesheim, R. O., 2319.
—. See also Neumann, A. L. et al., 2972.
—. See also Washlstrom, R. C. et al., 2320.
Johnson, E. P. 935.
— & Gross, W. B., 2917.
Johnson, H. W. 1608.
—. See also Baisden, M. S. et al., 1270.
—. See also Larsen, A. B. et al., 1260.
Johnson, L H. See Laakso, J. W., 183.
Johnson, M. W. See Manhoff, L. J., Jr., 2187.
Johnson, R. B., 2603.
Johnston, J. E. & Mixner, J. P., 1197, 3075.
Johnston, N. C. See Ciordia, H., 1879.
Johnstone, I. L. & Scott, M. T., 3627.
Jolly, D. W. & Kane, G. J., 1117.
Jonathan, S. R., 115.
Jones, B. J., Brown, J. B., Miller, M. D. & Booher, L. J., 2745.
Jones, E. R. See Uzzell, E. M. et al., 560.
Jones, E. W., 3704.
Jones, J. M. See Black, W. H. et al., 2641.
Jones, N. R. See Evans, W. C. et al., 1453.
Jones, J. C. See Cooper, J. B. et al., 3166.
Jones, L. M., Smith, D. A. & Smith, H. A., 1118.
Jones, R. McC., page 192.
Jonnesco, D., 709.
Jordan, P. H. See Last, J. H. et al., 218, 1176.
Jordan, W. J., 1946.
Jordan, W. S. & Feller, A. E., 1017.
Jordão, L. P. & Gouveia, P. F., 3746.
Joshua, J., 2022.
Joshua, J. O. See Alston, J. M. et al., 2538.
Josland, S. W., 947.
Joubert, L. See Goret, P., 675, 3506.
—. See also Goret, P. et al., 54.
—. See also Martin, L. A. et al., 3233.
Jouve, F. See Drieux, H. et al., 1108.
Jude, A. See Jaulmes, C. et al., page 482, 3128.
Juhn, M., 3320.
Jukes, T. H. See Stokstad, E. L. R. 2344.
Julian, L. M. & DeOme, K. B., 2720.
Jungeblut, C. W. & Steenberg, E., 372.
Jungherr, E. L., 2349.
— See also Burr, W. E. et al., 1277.
—. See also Easterbrooks, H. L. et al., 1862.
Jurado, F. R. & Fagonde, A. P., 3147.
Jussiant, A. & Conzemius, 64.

K

van der Kaay, F. C., Teunissen, G. H. B., Emmerie, A. & van Eekelen, 2331.
Kabat, E. A. See Fischel, E. E. et al., 750.
—. See also Lumsden, C. E. et al., 1686.
Kachmar, J. F., Boyer, P. D., Gullickson, T. W., Liebe, E. & Porter, R. M., 1076.
Kaemmerer, K. See Asher, T. et al., 3751.
Kästli, P., 2488, 3134.
— & Binz, M., 2161.
Kafka, H., 1532 .
Kahler, H. See Dalton, A. J. et al., 3724.
Kahn, J. R. See Skeggs, L. T., Jr. et al., 1219.
Kalchschmidt, H. G., 2091.
Kalich, J. See Rolle, M., 1978.
Kalikin, B., 2205.
Kalkbrenner, A., 1851.
Kalter, S. S., 717, 1356.
Kamel, H., 3493.
Kaminishi, K. See Fujita, A. et al., 2382.
v.d. Kamp, C. J. G. See Mol, M. J., 1625.
Kampschmidt, R. F., Mayer, D. T., Herman, H. A. & Dickerson, G. E., 3074, 3076.
Kane, G. J. See Jolly, D. W., 1117.
Kaneko, T. See Hosoda, T., 1393.
Kantorowicz, O., 3094.
Kaplan, E. & Zuelzer, W. W., 3716.
Kaplan, M. M., 1369.
Kapoun, R. See Zacherl, M. K., 856.
Karlshoj, K. See Dalgaard-Mikkelsen, S. et al., 2853.
Karlson, A. G., Delaude, A. & Needham, G. M., 598.
—. Gainer, J. H. & Feldman, W. H., 1263.
—. See also Feldman, W. H. et al., 639.
Karpov, P. L. See Lopyrin, A. I. et al., 3079.
Karrer, H., Mayer, K. F. & Eddie, B., 392.
Karrer, J. See Hässig, A. et al., 1933.
Karrer, P., page 59.
Karsten, 3492.
Kartsonis, P. L. & Austin, J. A., 764.
Kartus, S. See Spies, T. D. et al., 839.
Karvonen, M. J. See Hitchcock, M. W. S. et al., 1830.
Karzon, D. T. & Bang, F. B., 3591.
—. See also Bang, F. B. et al., 2034.
Kaschula, V. R. See Stephan, S. A. R. et al., 2501.
Kasprzak, E., Pieniążek, J. & Serafinowicz, H., 3174.
Kass, E. & Steen, E., 2885, 2886.
—. See also Steen, E., 3203 .
Kass, E. H. See Womack, C. R. et al., 2377.
Kates, K. C., 1741.
Kattus, A. A. See Harvey, A. M. et al., 1146.
Katz, E. See Waksman, S. A. et al., 833.
Katz, L. N. See Stamler, J. et al., 1785.
Kauffmann, F, page 339.
—, Silberstein, W. & Gerichter, C. B., 3167.
Kaufman, L., 859.
Kaunitz, H. See Atkinson, W. B. et al., 2334.
—. See also Elftman, H. et al., 2335.
Kawakami, Y. See Shimizu, T., 2579, 2582.
Kawashima, H. & Yoshida, T., 2578.
Kaye, S., 1821.
Kearney, W., Farrelly, B. T. & Cronin, M. T. I., 923.
Kearns, C. W. See Roan, C. C., 2688.
—. See also Sternburg, J. et al., 425.
Keast, J. C., 2113.
Keating, F. E. See Black, W. H. et al., 2641.
Keefe, T. J. See Common, R. H. et al., 531, 2151.
Keener, H. A., Baldwin, R. R. & Percival, G. P., 3666.
—, Percival, G. P., Ellis, G. H. & Beeson, K. C., 1072.
Keep, J. M., 881, 3646.
—, Steel, J. D. & Whittem, J. H., 1694.
Keith, C. K. See Sadun, E. H. et al., 448.
Keith, R. K., 3643.
Kelley, G. W. See Hansen, M. F. et al., 1163, 2138.
—. See also Todd, A. C. et al., 437, 438, 439, 441.
Kelley, R. B., 2432.
Kelley, V. C., Good, R. A. & Glick, D., 3697.
Kellner, A., Correll, J. W. & Ladd, A. T., 3692, 3693.
Kelly, C. B., Jr. See Bidwell, M. H., 232.
Kelly, C. F. See Ittner, N. R., 3069.
Kelly, D. R. See Schnitzer, R. J. et al., 344.
Kelner, A., 3520.
Kelser, R. A., 358, 1528.
Kempe, C. H. See Silver, H. K., 889.
Kemper, H., page 192, 2129.
Kemper, H. E. See Davis, C. L., 3282.
Kendall, E. C., 840.
Kendall, K. A., Salisbury, G. W. & Vandemark, N. L., 1432.
Kendall, S. B., 350, 762.
Kendrick, J. W., 1485.
Kennedy, G. C. See Bishop, P. M. F. et al., 529.
Kenny, G. C., Everist, S. L. & Sutherland, A. K., 510.
Kent, P. W. See Seibert, B., 2825.
Kerbey, G. P. & Martin, S. P., 3719.
—. See also Margolis, G. et al., 165.
—. See also Martin, S. P., 1722.
Kerpkamp, H. C. H. See Fenstermacher, R., 2019.
Kerr, D. E. See Dolman, C. E. et al., 49.
Kesler, I. M. & Knodt, C. B., 3296.
Kessel, J. F. & Thompson, C. F., 694.
Kester, W. O. & Miller, E. B., 270.
Keuning, F. J. & van der Slikke, L. B., 749.
Khachatryan, A. B., 1103.
Khamenever, L. M., 665.
Kibler, H. H. & Brody, S., 539.
—. See also Brody, S. et al., 2695.
Kidd, J. G. See Tompsett, R. et al., 413.
Kiesel, G. K. See Roberts, S. J., 2500.
Kilbourne, E. D. & Horsfall, F. L., Jr., 3554.
Kilham, B. J., Reed, G. W. & Clark, C. F., 44.
Kilham, L., 732.
Kimler, A., 1598.
King, G. H., 3428.
King, J. D., 171.
King, W. V., 3263.
Kingston, J. S., 491.
Kinnunen, O. & Niemineva, K., 1519.
Kinsey, V. E. See Goldhaber, P. et al., 1078.
—. See also Zacharias, L. et al., 1077.
Kipkie, G. F. See Howell, A., Jr. et al., 1960.
Kirby, A. H. & Peacock, P. R., 1426.
Kirk, H., 3118.
Kirk, J. E. See Praetorius, E., 1847.
Kirkland, W. B. See Bolliger, A. et al., 22.
Kirkman, H. & Bacon, R. L., 454.
Kirsch, E., 3500.
Kiser, J. S. See Hilbert, K. F., 2503.
—. See also de Mello, G. C. et al., 2852.
Kishida, T. See Fujita, A. et al., 2382.
Kite, O. W., Shaw, J. H. & Sognnaes, R. F., 1112.
Kitts, A. W. See Drake, M. E. et al., 1704.
Kivimäe, A., 2642.
Kjedbjerg, J., page 598.
Kjeldgaard, N. See Lwoff, A. et al., 3599.
Klarenbeek, A., page 59.
Klein, M., Schorr, S. E., Tashman, S. & Hunt, A. D., Jr., 2120.
de Klerk, J. C., 895.
Kiesov, M. D., 1053.
Klieneberger-Nobel, E., 1874.
Kliesch, J. & Schwochow, K., 1543.

Kliewer, I. O. See Farley, H. et al., 1101.
Kligman, A. M., Baldridge, G. D., Rebell, G. & Pillsbury, D. M., 3333.
— & Mescon, H., 2442
—, — & DeLamater, E. D., 2443.
Kline, E. A. See Ham, W. E. et al., 2996.
Kloetzel, M. C. See Smith, C. R. et al., 2233.
Klopstock, A., 1707.
Klosterman, E. W., Dinusson, W. E., Lasley, L. & Buchanan, M. L., 2328.
— & Light, M., 154.
—. See also Buchanan, M. L. et al., 153.
Klotz, I. M. See Cowles, P. B., 2692.
Kluge, E. B. See du Toit, R., 2927.
Kment, A., 2712, 3042.
Knapp, B. See Moule, G. R., 3049.
Knapp, B., Jr. See Woodward, R. R., 1750.
Knaysi, G., Hillier, J. & Fabricant, C., 1593.
Kneeland, Y., Jr. & Price, K. M., 2026.
Knight, D. & Tompsett, R., 1264.
Knight, R. L. & Boyns, B. M., page 654, 2806.
Knight, V., Ruiz-Sanchez, F. & McDermott, W., 320.
—. See also Werner, C. A., 1636.
Knodt, C. B. See Kesler, I. M., 3296.
Knöpfel, W., 208.
Knoppers, A. Th., 3200.
Knowelden, J. See Hill, A. B., 2290.
Knowles, D. S. See Rhodes, A. J. et al., 97.
Knox, C. A. See Sade, H. D., 1656.
Kobayashi, R., Ando, K., Toyama, Y., Kuratsuka, K., Arima, S., Saito, K., Takayama, Y., Hironaka, N., Ishii, K., Honda, Y. & Kondo, K., 1009.
Kobozieff, N. & Pomriaskinsky-Kobozieff, N.-A., 880.
Koch, P., 1544.
Koch-Weser, D., Szanto, P. B., Farber, E. & Popper, H., 2370.
de Kock, G., 1230.
Kocsán, C. See Mosonyi, L. et al., 1130.
Kodicek, E. See Murray, P. D. F., 807.
Kodrnja, E., 3571.
Koegel, A., 2209, page 482, 3113.
Koenig, H. & Koenig, R., 2665, 2666.
— & Winkler, A., 2539.
Koenig, R. See Koenig, H., 2665, 2666.
Koerber, W. L., Greenspan, G. & Langlykke, A. F., 1387.
Köhlein, J., 1529.
Kohls, G. M. See Jellison, W. L., 1272.
Kolb, R. W. & Schneiter, R., 524.
Koller, R. & Jahnel, J., 874.
Kolochine-Erber, B. & Collombier, M., 2867.
—. See also Mattei, C. et al., 3186.
Komaromy, J. See Mosonyi, L. et al., 550.
Komarov, A. & Goldsmith, L., 1708, 1709.
Kon, S. K. See Braude, R. et al., 2643.
—. See also Davis, V. E. et al., 806.
Kondo, K. See Kobayashi, R. et al., 1009.
Kononov, A., 1670.
Konorski, J. & Garry, S., 2723.
Konst, H. & Plummer, P. J. G., 2109.
Koomen, J., Jr. See Syverton, J. T. et al., 451, 781, 782.
Kopaczewski, W., page 839.
Koppel, Z. See Nižnánsky, F., 1321.
Koprowski, H., Jervis, G. A., James, T. R., Burkhardt, R. L. & Poppensiek, G. C., 1360.
— & Le Bell, I., 416.
Kordan, B. See Biskind,, G. R. et al., 467.
Koren, J. & Turner, V., 1460.
Korim, P., 2518.
Koroleva, V. P., Noskov, A. I., Sychkov, N. V. & Dzhilovyan, K. A., 3501.
Koropov, V. M., 1857, 3396.
Korson, R., 2358.
Koštanský, K., 1012.
Kotlán, A., 1740.
— & Pellérdy, L., 2552.
Kouo, C. C. See Lieou, Y. C., 710, 894.
Kourilsky, R. See Robineaux, R. et al., 1882.
Koutz, F. R., 104.
Kowalewski, K. See Jaworski, Z., 2169.
Kozar, Z., 1749.
Kraft, L. M. See Melnick, J. L. et al., 2013.
Kraft, M. E. See Simon, J. et al., 297.
—. See also Spencer, G. R. et al., 298.
Kral, F., 374.
Kramer, Y. M., 1921.
Kraneveld, F. C., 3594.
— & Djaenoedin, R., 1618, 1663, 2542, 3323.
—, Erber, M. & Mansjoer, M., 2841.
— & Mansjoer, M., 1697, 2543.
— & Nasoetion, A., 1700.
— & Pettinga, J. J., 1725.
Krastin, N. I., 1051, 1052.
Kratzing, C. C. & Slater, E. C., 213.
Krause, D. & Welz, G., 2989.
—. See also Völker, R., 821.
Krauss, S., 2744.
Křeček, J., Sterzl, J., Křečková, J. & Vaicenbacher, V., 1982.
—. See also Sterzl, J., 522.
Křečková, J. See Křeček,, J. et al., 1982.
Krediet, P. See Krediet-Endert, S. M., 836.
Krediet-Endert, S. M. & Krediet, P., 836.
Krehl, W. A., 2650.
Krider, J. L. See Adamstone, F. B. et al., 2332.
—. See also Johnson, B. C. et al., 3302.
Krishna Rao, C., 3073.
Krishnaswamy, N. See Venkataramanan, K., 2105.
Krüger, G., page 272, 2465.
Krug, E. S. & Mayhew, R. L., 1416.
Kruger, A. P. See Leif, W. R., 1468.
Krukovsky, V. N., Loosli, J. K. & Whiting, F., 1833.
—. See also Bratzler, J. W. et al., 801
Krupski, A., Almasy, F. & Ulrich, H., 2079.
Kruse, E., 2182.
Kruse, T. K. See McLain, P. L. et al., 3103.
Kube, 170.
Kubiak, G. V. L. See Giovannoni, M., 1745.
Kubin, R. & Mason, M. M., 2711.
Kühl, R., Hoffmann, P. & Wolf, 2609.
Kühn, A., page 192.
Künzer, P. K. & Velbinger, H. H., 2619.
Kuhns, W J., 417.
Kulka, D., Preston, J. M. & Walker, T. K., 2446.
Kull, G. E. See Isaksson, A. et al., 1371.
Kumaran, J. D. S. & Turner, C. W., 2719.
Kunst, H. See Jansen, J., 2594, 2815.
—. See also Jansen, J. et al., 1783.
Kuratsuka, K. See Kobayashi, R. et al., 1009.
Kurjana, R. See Donker-Voet, J., 1701.
—. See also Martini, I., 3245.
Kurtpinar, H., 3260, 1035.
—, Antepliogiu, H. & Ergün, H., 3279.
—. See also Enzie, F. D., 865.
—. See also Furman, D. P., 428.
—. See also Tinaz, A., 2947.
Kurtz, H. B. See Francis, T., Jr., 367.
Kurtz, M. See de Bodo, R. C. et al., 3040.

L

Laakso, J. W. & Johnson, L. H., 183.
Labatut, M., 1198.
Labaw, L. W., Mosley, V. M. & Wyckoff, R. W. G., 1718.
Lacaille, P. See Gros, F. et al., 829.
Lachenschmid, B., 291.
Lacrouts, M., 3317.
Lacy, H. & Lankford, C. E., 964.
Ladd, A. T. See Kellner, A. et al., 3692, 3693
Lafontaine, A. See Nélis, P. et al., 666.
Lagergren, B. & Frisk, A. R., 1262.
Lagneau, F., 2114.
Lagodsky, H. See Launoy, L. et al., 997.
Lagrange, E., 3283.
Lagunov, M. R. See Onegov, A. P. et al., 2647.
Lahtonen, A., 2655.
Lahure, R. See Robin, V. et al., 831.
Lainé, B. See Euzéby, J., 3647.
Laing, A. D. M. G., 1550.
Laing, W. J. See Payne, W. J. A. et al., 3403.
Laird, M., 1043.
Laird, R. L. See McVay, L. V. et al., 695.
Lajtha, L. G., 1214.
Laktionov, A., 2900.
Laktionov, A. M., 1689.
Lalanne, A., 2018.
Lall, J. M. See Munro, D. A., 1804.
Lamanna, C. & Mallette, M. F., 1981.
Lambling, A. See Bonfils, S., 1087.
Lambranzi, R., 2021.
Lamont, H. G., 60, 1928.
— & Gordon, W. A. M., 1006.
—, Luke, D. & Gordon, W. A. M., 1464.
Lamy, R. See Béquignon, R. et al., 1345.
Lancaster, J. E. See Chodkowski, A., 1578.
Landau, J. See Feigenbaum, A., 2252.
Landboe-Christensen, E. See Bohn, C. L. S. et al., 553.
Lander, P. E., page 272.
Lane, M. See Prudder, J. F. et al., 561.
Lang, K., 1252.
Langdon, R. F. N., 1801.
Lange, H. F. & Palmer, H., 1167.
de Lange, M., 1542.
de Langen, C. D. & ten Berg, J. A. G., 1114.
Langer, P. H. See Harms, H. F., 1959.
Langheinrich, W., 586.
Langlois, B. See Szumowski, P., 3740.
Langlykke, A. F. See Koerber, W. L. et al., 1387.
Langridge, R. G. See Stuart, P. et al., 3470.
Lanjouw, J., 2251.
Lankford, C. E. See Lancy, H., 964.
—. See also Schubardt, V. T. et al., 1657.
Lannek, N., 2389.
Lapage, G., page 598.
Lardy, H. A. See Ghosh, D. et al., 242.
—. See also Plaut, G. W. E., 1514.
Larsen, A. B, 936.
—, Groth, A. H. & Johnson, H. W., 1269.
—, Vardaman, T. H. & Groth, A. H., 1609.
—. See also Baisden, M. S. et al., 1270.
Larsen, P. H., 2244.
— & Gilman, H. L., 321.
Larsh, J. E., Jr., 123.
Larson, A. See Gunnison, J. B. et al., 3477.
Lasater, T. E. See Smith, S. G., 2330.
Lash, J. J., 604.
Laskey, A. M., 613.
Laskowski, L., Stanton, M. F. & Pinkerton, H., 2872.
—. See also Stanton, M. F. et al., 331.
Lasley, L. See Klosterman, E. W. et al., 2328.
Lasnitzki, I. See Passey, R. D. et al., 2955.
Lasserre. See Nanta et al., 1061, 2952.
Last, J. H., Jordon, P., Pitesky, I. & Bond, E., 218.
—, —, — & Siegel, B. M., 1176.
Lastra, I. & Coatney, G. R., 2881.
Latimer, H. B. & Cordier, R. L., 3720.
Launoy, L., 341, 2545.
—, Lagodsky, H. & Jeanpierre, C., 997.
Laurell, G., Löfström, G., Magnusson, J. H. & Ouchterlony, O., 334.
Laurent, A. M. See Salk, J. E. et al., 3553.
Law, L. W., 464.
— & Miller, J. H., 3285, 3286.
Lawley, D. N. See Stirling, A. C. et al., 2181.
Lawrence, J. S. See Hawking, F., 1244.
Lawrie, N. R. See Cater, D. B., 864.
Lawson, A. See Warburg, O., 3711.
Lawson, J. R., 2850.
Lazarow, A., 616, 1215.
Lazarus, A. S. See Gunnison, J. B. et al., 3477.
Lazarus, M., 1058.
— & Rogers, W. P., 2950.
Leach, E. W., 1233 & 1234.
Leahy, J. R. & Barrow, P., page 654.
Leaming, J. D. See Cabasso, V. J. et al., 3580.
Leão, A. E. A. & Furtado, A. da R., 983.

Lebedev, E. M. See Abramov, I. V. et al., 3532.
LeBell, I. See Koprowski, H., 416.
Leberman, P. R. See Smith, P. F. et al., 1653.
Lebrun, J. See Delauney, A. et al., 3706.
—. See also Robineaux, R. et al., 1882.
Lechevalier, H. See Waksman, S. A. et al., 883.
Lecks, H. & Wolman, I. J., 549.
Lederberg, J., 993.
Lee, C. S. See Tsuboi, K. K. et al., 2359.
Lee, D. H. K., 1156, page 192.
—. See also Riek, R. F., 2698, 2699.
—. See also Riek, R. F. et al., 1068.
Lee, H. J., 1760.
Lee, J. A., 3778, page 598.
Lee, J. G., 3324.
Lee, J. M. See Crossman, J. V. et al., 912.
Lee, S. W. See Foley, E. J., 1579.
Leech, F. B., 2152.
Leeson, H. S., Lumsden, W. H. R., Yoffe, J. & Macan, T. T., page 192.
Leffel, E. C. See Shaw, J. C. et al., 1755.
Legeay, G., 2437.
Legenhausen, D. H. See Hall, W. J. et al., 954.
Legg, J., 429, 2304.
Legros, G. See Nélis, P. et al., 666.
LeGrow, W. R. See Gilham, H. L., 2516.
Lehnert, E., 1400, 2243, 3258.
—. See also Bakos, K., 1615.
Lehrer, W. P., Jr., Wiese, A. C., Moore, P. R. & Ensminger, M. E., 3677.
—. See also Wiese, A. C. et al., 3300.
Leidy, G. See Alexander, H. E., 3161.
Leif, W. R. & Kruger, A. P., 1468.
Leiper, J. W. C., 2553.
Leite-Ribeiro, V. R. See de Assis, A., 932.
Leiter, J., Downing, V., Hartnell, J. L. & Shear, M. J., 2075.
—. See also Greenspan, E. M. et al., 2076.
Leiwant, B. See Schnitzer, R. J. et al., 344.
LeMay, M. See Fischel, E. E. et al., 750.
Lemberg, R. See Foulkes, E. C., 2134.
Lemétayer, E., 3558.
Lennette, E. H., Meiklejohn, G. & Thelen, H. M., 2293.
—. See also Delay, P. D. et al., 747.
—. See also Meiklejohn, G., 1710.
Lentz, W. J., 492.
León, A. P. & Guadalupe de Ita, M., 2605.
Leonards, J. R. See Skeggs, L. T., Jr., 1219.
Leonov, N. I., 1805.
Lépine, P. & Atanasiu, P., 1365.
— ,— & Croissant, O., 2574.
— & Sautter, V., 2909.
Lepkovsky, S., Borson, H. J., Bouthilet, R., Pencharz, R., Singman, D., Dimick, M. K. & Robbins, R., 3303.
Lepper M. H., Caldwell, E. R., Jr., Smith, P. K. & Miller, B. F., 1807.
—. See also Caldwell, E. R., Jr. et al., 3016.
Lerche, 2510.
Lerner, I. M., page 192, 1901, 3123.
—, Taylor, L. W. & Beach, J. R., 1621.
Leroux, R. See Roussy, G. et al., 2793.
LeRoy, H. V., Tweedy, W. R. & Ashkenazy, M., 3022.
Lesbouyries, G., 3476.
— & Charton, A., 486.
Lesley, S. M., French, R. C. & Graham, A. F., 2037.
Lester, W., Jr. See Robertson, O. H., 2224.
Leunen, J. See Florent, A., 1693.
Leuthold, A., 2759.
Levaditi, C., Vaisman, A. & Dunoyer, M., 1344.
—, — & Hamelin, A., 3187.
—, — & Lévy, P., 3150.
—, — & Lévy, R., 308.
LeVeen, H. H., Talbot, L. J., Restuccia, M. & Barberio, J. R., 848.
Levenshtern, A. E., 1802.
Lever, W. F., 281.
Levi, M. L., 327, 1275.
— & Cotchin, E., 1296.
Levillain, W. D. See Heaton, W. E. et al., 783.
Levine, H. B. & Wilson, J. B., 1638.
—. See also Gerhardt, P. et al., 1658.
Levine, M., 2830.
Levine, N. D., 3640.
—, Miller, L. J., Morrill, C. C. & Mansfield, M. E., 1411.
Levine, S. & Novak, M., 1659.
Levinson, S. O. See Milzer, A. et al., 2823.
Levy, E. See Bang, F. B. et al., 3545.
—. See also Elek, S. D., 2221.
Levy, M. N. See Berne, R. M., 558.
Lévy, P. See Levaditi, C. et al., 3150.
Lévy, P. P., 3148.
Lévy, R. See Levaditi, C. et al., 308.
Lewert, R. M., 352.
Lewis, A. E. & Goodman, R. D., 2392.
Lewis, D., 2142.
Lewis, E. A., 2612, 2928.
Lewis, J. H., Ferguson, J. H. & Howe, A. C., 847.
Lewis, J. S. See Jasper, D. E., 2856.
Lewis, M. B. See Milzer, A. et al., 2828.
Leyva, J. F., 1586, 1924.
Lhotka, J. F. & Davenport, H. A., 2449.
— & Ferriera, A. V., 1881.
Li, C. H. See Moon, H. D. et al., 456.
Li, K. K. See Peck, S. M., 982.
Libert, O., 3082, 3083.
Libert, R. See Bang, F. B., 2593.
Lichstein, H. C., 1829.
— & White, J. E., 995
—. See also Billen, D., 990.
Lide, T. N. See Margolis, G. et al., 165.
Lidwell, O. M. & Lowbury, E. J., 844.
Liebe, E. See Kachmar, J. F. et al., 1076.
Lieberherr, R. See Büchi, J. et al., 1596.
Liebermeister, K. & Zehender, E., 1711.
Liebow, I. M. See Hellerstein, H. K., 1217.
Liégeois, F. & Derivaux, J., 1435, 3575.
Lie-Kiau-Joe, 3270.
Lienert, E., 1806, 3634.
Lieou, Y. C. & Kouo, C. C., 710, 894.
Light M. See Klosterman, E. W., 154.
Lightbound, T., 528.
Lilenkov, I. P., 1769.
Lillie, R. D., Windle, W. F. & Zirkle, C., 615.
Lin, C. See Feng, L. C. et al., 2626.
Lincoln, H., 2808.
Lind, P. E. See Burnet, F. M., 1698, 2273.
Linder, J. E., 1880.
Lindgren, G. See Goldberg, L. et al., 1504.
Lindner, A. F., Brieskorn, C. H. & Franke, H., 1471.
Lindquist, A. W. See Hoffman, R. A. et al., 757.
—. See also Roth, A. R., 756.
Lingenzowski, F. L. See Ackert, J. E., 3275.
Link, V. B., 1932.
Linton, J. J. K., 577.
Lippman, R. W., Ureen, H. J. & Oliver, J., 3725.
Lips, H. J. & McFarlane, W. D., 1555.
Lipton, M. M. See Freund, J. et al., 1030.
Lissot, G., page 272.
Little, C. A., 3025.
Littlejohn, A. I., 1706, 2025.
—. See also McEwen, A. D. et al., 3566.
Littman, M. L., Phillips, G. E. & Fusillo, M. H., 1965.
Liu, C. & Bang, F. B., 753.
Liu, O. C. See Granoff, A. et al., 2916.
Llamozas, G. P. See Vogelsang, E. G., 423.
Lloyd, B. See Dalton, A. J. et al., 3724.
Lloyd, G. M., Macdonald A. & Glover, R. E., 2285.
Lobin, N. V., 1503.
Lochhead, M. S. See Scharrer, B., 780.
Loeb, L. J. See Murray, R. G. E., 915.
Loeffler, E. See Felsenfeld, O. et al., 1948.
Loefgren, R., 1664.
Löfström, G. See Laurell, G. et al., 334.
Lofthouse, F., 3444.
Loginova, N. V. See Lopyrin, A. I. et al., 3079.
Loizelier, A. B. See Botija, C. S., 2035.
Loman, S. See Wolf, J. W. et al., 3510.
Lombard, C., 866.
Lombard, L., Morgan, B. B. & McNutt, S. H., 3739, 3745.
Lombard, W. A. See Clark, R., 3355.
Long, C. N. H. See McDermott, W. V. et al., 532, 1520.
—. See also Opsahl, J. C. et al., 3744.
Long, D. A., Miles, A. A. & Perry, W. L., 3155.
Long, E. R., 640.
Long, J. B. & Favour, C. B., 1819.
Long, J. H. See Aegerter, E., 819.
Long, P. H., 1134.
—, Schoenbach, E. B., Bliss, E. A., Chandler, C. A. & Bryer, M. S., 828.
—. See also Bliss, E. A. et al., 1493.
—. See also Bryer, M. S. et al., 965.
Longley, E. O., 253, 841.
Loomis, L. N., Cunningham, C. H., Gray, M. L. & Thorp, F., Jr., 1020.
Looney, J. M. & Stein, T., 975.
Loosli, C. G., Hull, R. B., Berlin, B. S. & Alexander, E. R., 2896.
—. See also Hull, R. B., 8297.
—. See also Steiner, P. E., 455.
Loosli, J. K. & Wallace, H. D., 3013.
—. See also Bratzler, J. W. et al., 801.
—. See also Krukovsky, V. N. et al., 1833.
—. See also Smith, S. E. et al., 151.
Lopes de Faria, J., 2336.
Lopez, G. G. See Spies, T. D. et al., 839.
Lopyrin, A. I., Loginova, N. V. & Karpov, P. L., 3079.
Lorand, L. See Bailey, K. et al., 3041.
Lorenz, E. See Bryan, W. R. et al., 1430.
Loring, H. S. See Luck, J. M. et al., 2730, 2731, page 654.
Losinski, T., 2575.
Louf. See Courréges et al., 725.
Lousse, A. & Ronsse, P., 556.
Louw, D. J. See Bosman, S. W. et al., 1723.
Louw, J. G., Williams, H. H. & Maynard, L. A., 1501.
—. See also Reinach, N., 1436.
Lovell, R., 161, 1088.
—, Foggie, A. & Pearson, J. K. L., 1613.
—. See also Harvey, D. G., 314.
Lovelock, J. E See Andrewes, C. H. et al., 1705.
Lowbury, E. J., 576.
—. See also Lidwell, O. M., 844.
Lowbury, E. J. L. See Jackson, D. M. et al., 3478.
—. See also Topley, E. et al., 1812.
Lowe, E. G., 1778.
Lowell, F. C. See Franklin, W. et al., 845.
Lowen, H. J. See Wright, L. T., 1964.
Lowenthal, M. See Saphir, O., 3686.
Lowry, C. See Bates, R. W., 1200.
Lubanetsky, S. A., 1182.
Lucam, F., 86, 1372.
—. See also Goret, P. et al., 54.
Lucas. See Thiery, J.-P., 312.
Lucas, A., Andral, Bouley, Paraf & Quinchon, 968, 3455.
Lucas, A. M., 3664.
Lucas, W. C. See Seeger, K. C. et al., 348.
Lucia, S. P. See Aggeler, P. M., page 59, 2212.
Luck, J. M., Loring, H. S. & Mackinney, G., 2730, 2731, page 654.
Luder, W., 3450.
Ludlam, G. B. & Hemingway, H., 2407.
Ludwick, T. M. See Bush, L. J. et al., 1196.
Ludwig, D J., 567.
Luecke, R. W., Culik, R., Thorp, F., Jr., Blakeslee, L. H. & Nelson, R. H., 1080.
—. See also Sarkar, B. C. R. et al., 1835.
Luedtke, W. E. & Angevine, D. M., 3695.
Lütz, 120.
Lukashov, I. I., 2096.
— & Nikitin, M. G., 1674.
Luke, D., 2824.
— & Gordon, W. A. M., 122, 2353.
—. See also Lamont, H. G. et al., 1464.

Luktuke, S. N. See Roy, A. et al., 2416, 3088, 3374.
Lumsden, C. E., Kabat, E. A., Wolf, A. & Bezer, A. E., 1686.
Lumsden, W. H. R. See Leeson, H. S. et al., page 192.
Lund, A. S. See Haig, D. A., 1983.
Lundberg, W. O. See Carpenter, L. E., 2333.
Luoto, L., Huebner, R. J. & Stoenner, H. G., 3604.
Luque, J. M. S., 2548.
Luria, S. E., 2292.
Luz, L. A. See Faber, H. K. et al., 2036.
Lwoff, A., page 272, page 598.
—, Siminovitch, L. & Kjeldgaard, N., 3599.
Lynch, T., 27.

M

Maas, A., 25.
Maassen, W. & Heyse, E.-H., 2823.
Macaulay, J. W. & Shaw, G. D., 2875.
McAdams, G. See Tennant, R. et al., 516.
McAleer, W. B., 215.
McAllister, W. B., Jr. & Waters, L. L., 497.
Macan, T. T. See Leeson, H. S. et al., page 192.
McBee, B. J. See Hoster, M. S. et al., 1752.
McBride, O. C., Sullivan, W. N. & Fulton, R. A., 759.
McCallin, P. F. See Taylor, E. S. et al., 135.
McCance, R. A. & Widdowson, E. M., 2385, 3715.
McCandless, E. L. & Dye, J. A., 1160.
McCarroll, P. J. See Hunter, W. M. D. et al., 150.
McCarthy, K. See Downie, A. W., 3222.
McCarty, M. See Anderson, H. C., 3621.
McCay, C. M. & Udall, R. H., 2620.
MacCleary, R. See Mirick, G. S. et al., 1581.
McCleery, E. F. & Blamire, R. V., 1047.
McClurkin, A. W., 1953.
McClymont, G. L., 139, 267, 268, 3348.
—, Greaves, H. & Duncan, D. C., 3089.
McCollum, W. H. See Doll, E. R. et al., 388, 1702, 2289.
McCollum, W. T. See Doll, E. R. et al., 729.
McConnell, K. P. See Watts, N. P., 2307.
McCroskey, R. M. See Thompson, H. J. et al., 540.
McCullough, N. B., Eisele, C. W. & Pavelchek, E., 32.
McCullum, F. O. See Bedson, S. P. et al., page 653.
McDermott, E. E. See Bentley, H. R. et al., 502, 3699.
McDermott, W. See Knight, V. et al., 320.
—. See also Tompsett, R. et al., 413.
McDermott, W. V., Fry, E. G., Brobeck, J. R. & Long, C. N. H., 532, 1520.
McDiarmid, A., 662, 2467, 3169, 3489.
—. See also Taylor, A. W., 1282.
—. See also Wilson, W. R., 1951.
Macdonald, A. & Downie, A. W., 3221.
—. See also Downie, A. W., 1679.
—. See also Lloyd, G. M. et al., 2285.
MacDonald, A. D. See Hall, W. J. et al., 954.
Macdonald, G., 2350.
McDonald, J., 2781.
McDonald, J. R. See Norris, D. S. et al., 468.
McDonald, R. K. See Miller, J. H. et al., 563.
McDougall, W. A., 508.
McDowell, F. & Varney, P. L., 938.
McDuffie, W. C., Eddy, G. W., Clark, J. C. & Husman, C. N., 2030.
McEntee, K. See Olafson, P., 3327.
McEwen, A. D., Stamp, J. T. & Littlejohn, A. I., 3566.
—. See also Stamp, J. T. et al., 813.
McFarlane, D. & Rennie, J. C., 3005.
MacFarlane, J. C. W. See Cathie, I. A. B., 1600.
Macfarlane, M. G., 569
McFarlane, W. D. See Lips, H. J., 1555.
McGaughey, C. A., 2067.
McGee, W. A. See Doll, E. R., 3004.
McGee, W. R. See MacLeod, J., 2412.
McGhee, R. B., 1668.
McGinnis, J. See Sieburth, J. McN. et al., 3012.
—. See also Stern, J. R., 2963.
McGoon, D. C. See Rich, A. R. et al., 1818.
McGovern, V. J., Steel, J. D., Wyke, B. D. & Dodson, M. E., 2277.
McGrath, C. B. See Olson, C., Jr. et al., 92.
Machado, A. M. & de Olveira, J. A., 948.
Macheboeuf, M. See Gros, F. et al., 829.
Macholda, F. See van Deinse, F. et al., 1267.
McIlwain, H. See Fildes, P. et al., 2681.
Macindoe, R. F. H., 650.
McIntyre, R. W. See Dobbs, E. M., 3445.
MacKay, E. M. & Pecka, E. F., Jr., 1110.
McKay, F. & Morehouse, N. F., 66.
McKee, F. W. & Stewart, W. B., 1169.
McKeever, J. D. See Stewart, F. S., 2184.
McKenna, C. T. & Orchard, H. E., 2112.
McKerns, K. W. & Denstedt, O. F., 1716.
Mackerras, I. M. & Pask, V. M., 317.
McKinley, F. See Gifford, D. et al., 2821.
Mackinney, G. See Luck, J. M. et al., 2730, 2731, page 654.
Mackintosh, G. R., 3106.
Macklin, C. C., 2397.
Mackowiak, C. See Giraud, H., 1998.
McLain, P. L., Ruhe, C. H. W. & Kruse, T. K., 3103.
Maclay, M. H. See Carmichael, J., 1595.
McLean, C. R., Fitzgerald, J. D. L., Younghusband, O. Z. & Hamilton, J. D., 3696.
MacLean, M. E. See Broadhurst, J. et al., 379.
MacLeod, C. M. See Stollerman, G. H. et al., 3619.
McLeod, G. B. See Coop, I. E., 533.
MacLeod, J. & McGee, W. R., 2412.
— & Ponder, E., 1836.
McLimans, W. F. See Siem, R. A. et al., 2898.
McManus, E. C. See Scheidy, S. F. et al., 197.
McManus, J. F. A. & Cason, J. E., 850.
McNabb, A. L., 2762.
McNutt, S. H. See Holm, L. W., 41.
—. See also Lombard, L. et al., 3739, 3745.
Macpherson, D. F., 2769.
Macrae, J. See Campbell, A. M. G. et al., 329.
Macri, G., 2818.
McShan, W. H. See Smith, B. F., 2263.
McVay, L. V., Guthrie, F., Michelson, I. D. & Sprunt, D. H., 663.
—, Laird, R. L., Flanagan, J. B. & Sprunt, D. G., 695.
MacVicar, R. See Davis, V. E. et al., 806.
McVickar, D. L. See Randall, C. C. et al., 2280.
Macy, H. See Jezeski, J. J. et al., 857.
Madden, F. W., Herman, H. A. & Berousek, E. R., 3734.
Madigan, D. G., 3143.
Madoff, S. See Dienes, L. et al., 1280.
Madsen, H., 770.
Mäder, 1588.
Magalhaes, L. M., 2082.
Magee, H. E., 503.
Maggs, B. E. See Hill, R. et al., 885.
von Magnus, H., 1010, 1011.
— & von Magnus, P., 2586.
von Magnus, P. See von Magnus, H., 2586.
Magnusson, J. H. See Laurell, G. et al., 334.
Mahaffey, L. W., 1867.
Mahoney, L. J. & Barrie, H. J., 527.
Mahou, R. See Mornet, P., 691.
Maksic, D. & Bolten, G., 2087.
Makukhin, S. A., 2055.
Malan, C. E., 2440, 2441.
Malan, J. R. See Bekker, P. M. et al., 2686.
Malherbe, W. D. & Parkin, B. S., 2883.
Mallet, M., 3578.
Mallette, M. F. See Lamanna, C., 1981.
Malmros, H., 1754.
Mandels, G. R. & Siu, R. G. H., 1875.
Manderson, W. G. See Campbell, A. M. G. et al., 329.
Mandia, J. W., 1640.
Mangold, F. See Henle, W. et al., 1703.
Manhoff, L. J., Jr. & Johnson, M. W., 2187.
Manjrekar, S. L., 3159, 3188.
Mankikar, D. S. See Green, R., 1628.
Manley, F. H., 3567.
Mann, F. C. See Morris, D. S. et al., 468.
Mann, F. D., Mann, J. D. & Bollman, J. L., 803.
Mann, J. D. See Mann, F. D. et al., 803.
Mann, S. O. See Donald, L. G., 2.
Manning, W. K., 155.
Manninger, R., 365, 3231.
Mansfield, M. E. See Levine, N. D. et al., 1411.
—. See also Schmittle, S. C., 1374.
Mansi, W. See Daubney, R. et al., 1368.
Mansjoer, M., 1984.
—. See also Kraneveld, F. C., 1697, 2543.
—. See also Kraneveld, F. C. et al., 2841.
—. Se also Waworoentoe, F. K., 1736.
Mansohn-Bahr, P. H., page 59, 1895.
Mansvelt, P. R. See Mitchell, D. T., 2588.
Manthei, C. A., DeTray, D. E. & Goode, E. R., 957.
Mantovani, G. See Cominotti, L., 2904.
Manuelidis, E. See Hortsmann, D. M. et al., 3572.
Mapes, C. R. See Dikmans, G., 1419.
Maqsood, M., 3952.
Maragliano, G., 2664.
Marcenac, N., 3023.
Marchiafava, G. See Virgili, R., 1474.
Marcuse, K. & Eggert, E., 3497.
Marek, J. & Mócsy, J., page 482, 3434.
Margolis, G., Forbus, W. D., Kerby, G. P. & Lide, T. N., 165.
Mariani, M. See Burgio, G. R. et al., 1727.
Marinelli, L. D., 190.
—, Quimby, E. H. & Hine, G. J., 826.
Marion, G. B., Smith, V. R., Wiley, T. E. & Barrett, G. R., 3078.
Mariotti, P. & Casarosa, L., 3576.
Mark, D. D., 459.
Markee, J. E. See Sawyer, C. H. et al., 877.
Marks, J. & Vaughan, A. C. T., 2222.
Marlow, H. W., 1172.
Marmion, B. P. & Stoker, M. G. P., 1379.
—. See also Stoker, M. G. P., 1680.
Marneffe, H. & Seys, H., 1350.
Marotel & Pierron, 1967.
Marqués. See Nanta et al., 1061, 2952.
Marquez, V. See Curbelo, A., 1652.
Marr, A. G. & Wilson, J. B., 2246.
Marsboom, R., 1205.
Marsen, H. W. See Waletzky, E. et al., 2880.
Marsh, H., 24, 184.
Marshall, A. H. E. & White, R. G., 409.
Marshall, M. E. & Deutsch, H. F., 1848.
Marti, N. See Rekers, P. E., 3330.
Martin, A. R. See Hoggarth, E. et al., 930.
Martin, C. R. A., page 59.
Martin, G. J. See Moss, J. N. et al., 2924
Martin, L. A., 2590.
—, Goret, P., Joubert, L. & Toucas, L., 3233.
—. See also Blanc, G. et al., 401, 2040, 2042, 3235.
Martin, S. M. See Sweet, J. D. et al., 3702.
Martin, S. P. & Kerbey, G. P., 1722.
—. See also Kerby, G. P., 3719.
Martinaglia, 899.
Martinaglia, G. & Brandt, F. A., 1410.
Martinet, M. See Giroud, A., 858.
Martini, I. & Kurjana, R., 3245.

Martin Novelo, A., Jr. See Ruiz Sanchez, F. et al., 918.
Martorana, F., 1186.
Maskar, U., 2604.
Mason, J. H., 2046.
Mason, K. E. See Filer, L. J. et al., 2648.
Mason, M. M. See Kubin, R., 2711.
Massart, L. See Coussens, R. et al., 591.
—. See also Peeters, G., 546.
—. See also Peeters, G. et al., 2717.
Massidda, A., 667.
Masson, G. M. C. See Schaffenburg, C. et al., 1496.
Masson, M. J. & Phillipson, A. T., 3358.
Massy, V. & Rogers, W. P., 1059.
Mata, E. G., 1195, 3538.
Mather, K. See Darlington, C. D., page 191.
Mather, R. E., Pratt, A. D. & Holdaway, C. W., 1758.
Matheson, R., page 339.
Mathieson, D. R. See Watts, W. E., 1808.
Mathon, 3675.
Matsumoto, K., 2707.
Mattano, L. A. See Huddleson, I. F. et al., 1487.
Mattei, C., Kolochine-Erber, B., Aviérinos, F., Recordier, A.-M., Pahan, H. & Barbè, A., 3186.
Matthaei, E., 2185.
Matthews, H. T., 23.
Mattioli, A., 715.
Mattman, L. H. See Davis, J. B. et al., 3498.
Maurice, A. See Blanc, G. et al., 401, 2042.
Maurin, J. See Barski, G., 2001.
Maver, M. E. See Bryan, W. R. et al., 3288.
Maw, W. A. See Common, R. H. et al., 531, 2151.
Maxted, W. R. See Holt, H. D. et al., 925.
May, C. D. See Salmon, R. J., 2326.
Mayberger, H. W. See Gruenwald, P., 168.
Mayer, D. T., Squiers, C. D., Bogart, R. & Oloufa, M. M., 2415.
—. See also Kampschmidt, R. F. et al., 3074, 3076.
—. See also Thomas, L. E., 566.
Mayer, K. F., 3495.
—. See also Brunner, K. T., 2870.
Mayhew, R. L., 1414, 1415, 1417, 2944.
—. See also Delaune, E. T., 1413.
—. See also Krug, E. S., 1416.
Maynard, L. A. See Bratzler, J. W. et al., 801.
—. See also Louw, J. G. et al., 1501.
Maynert, E. W. & van Dyke, H. B., 2679.
Mazzotti, L., 1034.
—& Osorio, M. T., 1039.
Meade, B. W. & Smith, M. J. H., 3044.
Meadows, G. B. See Edwards, H. M. et al., 2323.
Meads, M., Harris, C. M., Haslem, N. M. & Cline, W. A., 1935.
Meara, P. J., 3056.
Medawar, P. B. See Billingham, R. E., 785.
Medlar, E. M., Bernstein, S. & Reeves, F. C., 3460.
Medovy, H., 1796.
Meenan, P. N., 2291.
Meessen, H. & Olszewski, J., 630.
Meeser, M. J. M., 157.
Megale, F., 349, 594.
Mehls, H. J., 1974.
Meigs, E. B., Burkey, L. A., Sanders, G. P., Rogosa, M. & Converse, H. T., 1248.
Meiklejohn, G. & Lennette, E. H., 1710.
—. See also Lennette, E. H. et al., 2293.
Meira, J. A. See Corrêa, M. O. A., 1299.
Meister, A., 2072.
Meites, S., Burrell, R. C. & Sutton, T. S., 2395.
Melampy, R. M. See Porter, J. C. et al., 3737.
Melendez, R. D., page 654.
Mellanby, E. M. See Fell, H. B., 479.
de Mello, G. C., Danielson, I. S. & Kiser, J. S., 2852.
de Mello, M. T. See Pacheco, G., 664.
Melnick, J. L., Clarke, N. A. & Kraft, L. M., 2013.
—, Shaw, E. W. & Curnen, E. C., 393.
—. See also Horstmann, D. M., 737.
Mendoza, I. L. See Generoso, J. D., 1376.
Mendy, R. M. See Crivellari, C. A., 1738.
Menges, R. W., 3502.
Mensa, A., page 272.
Menzani, C., 2108.
Menzel, A. E. O. See Sherman, W. B. et al., 1390.
Merchant, I. A., page 339.
Mercier, P. See Pillet, J. et al., 293.
Merilan, C. P., Herman, H. A., Edmondson, J. E., Tallman, K. L. & Crisler, O. S., 3136.
Merrill, D. L., 1508.
Merrill, J. P., Thorn, G. W., Walter, C. W., Callahan, E. J. & Smith, L. H., Jr., 562.
Merritt, P., 2339.
van der Merwe, S. W. See Bekker, P. M. et al., 2686.
Meschaks, P., 1536.
—. See also Garm, O., 1541.
Meschini, S., 487.
Mescon, H. See Kligman, A. M., 2442.
—. See also Kligman, A. M. et al., 2443.
Meshew, M. H., 886.
Mesrobeanu, L., Dorin, E. & Mitrica, N., 2538.
Messerli, W., 2939.
Messieri, A., page 654.
— & Moretti, B., 2790.
Metcalf, D. J. See de Burgh, P. M. et al., 2912.
Metianu, T., 3202.
Metzianu, T., 1331.
Meunier, P., 804.
Meyer, C. F. See Stein, I. F., Jr., 2118.
Meyer, E., page 59, 3126.
— & Verges, P., 3181.
Meyer, J. H., Grummer, R. H., Phillips, R. H. & Bohstedt, G., 1075.
Meyer, K. See Prudder, J. F. et al., 561.
Meyer, K. F. & Eddie, B., 1633.
—. See also Karrer, H. et al., 392.
Meyer, R. K. See Finerty, J. C., 226.
Meyer, S. N., Hougen, A. & Edwards, P., 3456.
Meyer-Helmstedt, F., 1278.
Meyn, A. & Stöffler, H., 3365.
de Meza, J., 3768.
Miale, J. B., 551.
Miall, L. M. See Miall, S., 285.
Miall, S. & Miall, L. M., 285.
Michaelsen, L., 1362.
Michelazzi, L., 1394.
Michelson, I. D. See McVay, L. V. et al., 663.
Mickle, E. R. See Swann, H. G. et al., 2148.
Micks, D. W., 2932.
—. See also Anigstein, L. et al., 521.
—. See also Rigdon, R. H. et al., 1992.
Middlebrook, G., 3453, 3457.
—. See also Dubos, R. J., 3151.
Middlebrook, W. R. See Bailey, K. et al., 3041.
Miheimid, M. A. See Priestley, F. W. et al., 987.
Mika, L. A. See Goodlow, R. J. et al., 1947.
Mikhaylov, N. N., 583.
Milanès, F. See Spies, T. D. et al., 839.
Miles, A. A., 752.
— & Pirie, N. W., 1240.
—. See also Long, D. A. et al., 3155.
Milks, H. J., 284.
Millard, A. See Dmochowski, L., 1065.
—. See also Passey, R. D. et al., 2955.
Millard, C. K., 3546.
Mille, R. See Galliard, H., 772.
Millen, T. W. See Prier, J. E. et al., 730.
Miller, A. J. See Stamler, J. et al., 1785.
Miller, A. R., page 508.
Miller, B. F. See Lepper, M. H. et al., 1807.
Miller, B. R. & Miller, R. E., 731.
—. See also Beaudette, F. R. et al., 91.
Miller, E. See Eschenbrenner, A. B., 2315.
Miller, E. B. See Kester, W. O., 276.
Miller, E. E. See Wharton, D. R. A. et al., 3656.
Miller, G. L., 1885.
—. See also Wharton, D. R. A. et al., 3656.
Miller, J. G., 3383.
Miller, J. H., McDonald, R. K. & Shock, N. W., 563.
—. See also Law, L. W., 3285, 3286.
Miller, L. J. See Levine, N. D. et al., 1411.
Miller, M. D. See Jones, B. J. et al., 2745.
Miller, R. E. See Miller, B. R., 731.
Miller, Z. B., Davison, C. & Smith, P. K., 2155.
Milligan, J. L., Anderson, J. O., Combs, G. F. & Briggs, G. M., 1444.
Milne, A., 1040.
Milne, F. N. J. See Rumball, P., 144.
Milstone, J. H., 552.
Milzer, A., Levinson, S. O. & Lewis, M. B., 2828.
Minett, F. C., 1092, 1094, 1917.
Mingioli, E. S. See Davis, B. D., 994.
Minkenhof, J. E. See Wolff, J. W. et al., 3511.
Minnich, V., Moore, C. V., Smith, D. E. & Elliott, G. V., 2342.
Mires, M. H., 1250.
Mirick, G. S., Richter, C. P., Schaub, I. G., Franklin, R., MacCleary, R., Schipper, G. & Spitznagel, J., 1581.
Mirri, A., 2038.
Mitchell, C. A. & Duthie, R. C., 1585.
—. See also Paterson, J. C. et al., 1105.
Mitchell, D. T. & Mansvelt, P. R., 2588.
Mitchell, H. H. See Johnson, B. C. et al., 1442, 2346.
Mitchell, P. & Moyle, J., 680.
Mitchell, R. L. & Tosic, J., 220.
Mithoefer, J. & Rapoport, C., 3712.
Mitrica, N. See Mesrobeanu, L. et al., 2538.
Mitrofanov, M. V. See Onegov, A. P. et al., 2647.
Mitscherlich, E., 2502.
— & Saeuberlich, G., 688.
Mittwer, T. See Bartholomew, J., 602.
Mixner, J. P., 875.
—. See also Johnston, J. E., 1197, 3075.
—. See also Sykes, J. G., 3736.
Moch, R., 1828.
Mochizuki, H. See Sugawa, Y. et al., 2576, 2581.
Mócsy, J. See Marek, J., page 482, 3434.
Modiuddin, A., 536.
Möhlmann, H. & Potel, K., 1334.
—. See also Röhrer, H. et al., 2888.
—. See also Traub, E., 2564.
Möller, O., 3093.
Moggridge, J. Y., 108.
Mohiuddin, A., 3723.
Moine, G., 1373.
Moine, G. G., 325.
Moir, R. J. & Williams, V. J., 2396.
Mol, M. J. & v.d. Kamp, C. J. G., 1625.
Mollaret, P., 3247.
Molomut, N. See Spain, D. M., 2232.
Moloney, J. B. See Bryan, W. R. et al., 1430, 3288.
Moloney, P. J. See Taylor, E. M., 3100.
Momberg-Jørgensen, H. C., 3581.
Momberg-Jörgensen, V. S., 979.
Monaci, A., 741.
Monlux, W. S. & Turk, R. D., 3267.
Montagna, M., 2694.
Montagna, W., 542.
— & Parks, H. F., 564.
—. See also Hamilton, J. B., 541.
del Monte, P., 3032.
deMontesquiou, M. See Hoyt, A. et al., 1561.
Monteverde, J. J. & Garbers, G. V., 3481.
Montgomerie, R. F., 1692.
Montgomery, A. V., Davis, J. C., Jr., Prine, J. M. & Swann, H. G., 2149.
—. See also Swann, H. G. et al., 2148.
Moon, H. D., Simpson, M. E., Li, C. H. & Evans, H. M., 456.
Moore, A. M. & Rockman, J. B., 1476.
Moore, C. V. See Minnich, V. et al., 2342.
Moore, D., 3266.
Moore, E. N., 65.
Moore, E. V., 1631.

Moore, F. D. See Schloerb, P. R. et al., 2132.
Moon, F. E. & Raafat, M. A., 3700.
Moore, P. R. See Lehrer, W. P., Jr. et al., 3677.
—. See also Wiese, A. C. et al., 3300.
Moore, T., 2324, 2847.
Moosbrugger, G. A., 362, 2887.
Morales Otero, P., 958.
Moran, A. B. See Bruner, D. W., 2507.
Moran, T. See Bentley, H. R. et al., 502, 3699.
Morange, R. See Robin, V., et al., 3014.
Morehouse, N. F., 1328, 1329.
—. See also McKay, F., 66.
Moret, R. See Sohier, R., 3760.
Moretti, B. See Messieri, A., 2790.
Morgan, B. B. See Lombard, L. et al., 3739, 3745.
—. See also Morse, E. V., 3156.
—. See also Pierce, A. E., 343.
Morgan, C. & Wyckoff, R. W. C., 713.
Morgan, C. L. See Cooper, J. B. et al., 3166.
Morgan, D. O., Parnell, I. W. & Rayski, C., 1742.
Morgan, R. S. See Wright, E. A. et al., 2247.
Morini, E. G. & Galofre, E. J., 3639.
Mornet, P. & Guerret, M., 1363.
— & Mahou, R., 691.
—, Orue, J. & Diagne, L., 1979.
—. See also Curasson, G., 2547.
Morrill, C. C. See Johnson, B. C. et al., 2346.
—. See also Levine, N. D. et al., 1411.
Morris, D. S., McDonald, J. R. & Mann, F. C., 468.
Morris, H. P., 132.
Morris, J. A. See Coburn, D. R., 1629.
Morris, R. H., 792.
Morris, R. S. See Taylor, S. G. et al., 1429.
Morrison, H. B. See Olds, D. et al., 1868.
Morrison, L. R. See Freund, J. et al., 1030.
Morrow, K. S. See Erb. R. E. et al., 1440.
Morrow, P. L., Bierman, H. R. & Jenkins, R., 557.
Morse, E. V., 200, 1610, 1611, 3466.
— & Morgan, B. B., 3156.
Morse, W. I., 2073.
Mortelmans, J. See Geurden, L. M. G. et al., 3243.
Morton, F., 2405.
Morton, H. E. See Smith, P. F. et al., 1653.
Mose, N. M., 811.
Moser, E. & Westhues, M., page 59, 2794.
Moses, E. See Bornstein, S. et al., 2592.
Moses, H. E. See Gustafson, D. P., 3241.
Moskey, H. E., 515.
Moskowitz, N., 603.
Mosley, V. M. See Labaw, L. W. et al., 1713.
Mosonyi, L., Held, R. & Kocsán, C., 1130.
—, Pálos, L. A. & Komaromy, J., 550.
Moss, J. N., Beiler, J. M. & Martin, G. J., 2924.
Mott, L. O. & Gates, D. W., 2563.
Moule, G. R., 3757.
— & Knapp, B., 3049.
— & Young, R. B., 2966.
—. See also Roberts, F. H. S., 2926.
De Moulin, F., 2508.
Movitt, E. R., 2992.
Moyle, J. See Mitchell, P., 680.
Mudaliar, S. V., Achary, G. R. & Alwar, V. S., 3201.
Mudd, S., Smith, A. G., Hillier, J. & Beutner, E. H., 1936.
—. See also Hillier, J. et al., 1937.
—. See also Hunter, M. E. et al., 909.
—. See also Smith, W. E. et al., 988.
Mühlbock, O., 131, 1424.
Müller, H., 2736.
Muhrer, M. E. & Gentry, R. F., 2713.
Muić, N., Tomašić, P. & Fleš, D., 1488.
Muir, J. C., 1232
Mullaney, P. E., 937.
Mulligan, H. W., 3066.
Munch, J. C., 172.
Munch-Petersen, S., 3728.
Munn, N. L., page 654.
Munro, D. A. & Lall, J. M., 1804.
Murnane, D., 910.
Muromtsev, S. N., 1225.
Murphy, J. B. & Sturm, E., 463.
Murphy, L. C. See Olitsky, P. K., 3249.
Murray, C. B. See Biggers, J. D. et al., 810.
Murray, M. D., 3749.
Murray, P. D. F., 283.
— & Kodicek, E., 807.
Murray, R. G. E., Gillen, D. H. & Heagy, F. C., 652.
— & Loeb, L. J., 915.
Musaev, M. A., 676.
Murgrave, A., 3265.
Muslu, Z., 2540.
—. Esin, I. & Demirer, F., 2495.
Mustakallio, E. & Rislakki, V., 3346.
Muth, O. H., 962.
Mutovin, V. I., 3337.
Myers, H. F. See Woods, G. T. et al., 1779.
Myers, R. M. & Almquist, J. O., 3735.
Mynors, L. S. See Gleeson-White, M. H. et al., 1398.
—. See also Heard, D. H. et al., 103.
Myrbäck, K. See Sumner, J. B., page 482, page 654.
Myren, J., 1605.

N

Nachlas, M. M. See Seligman, A. M. et al., 2383.
Naftalin, J. M. & Howie, J. W., 814.
Nagaty, H. F., 3643.
Nagy, G. See Wilkinson, A. W. et al., 2137.
Naimanov, I. D., 588.
Nairn, R. C., 3690.
Nakamura, J., 3565.
Nanta, Marqués, Lasserre, Bazex, Bru & Puget, 1061, 2352.
Nardelli, L., 1616, 2908.
Nardi, E., 1911.
Nardy, R. V. See Collins, D. L., 2931.
Narita, R. See Tabuchi, E. et al., 2580, 2584.
Nash, T. A. M., 2613, 3629.
Nasoetion, A. See Kraneveld, F. C., 1700.
Nasr, H. See Baker, F., 3029.
Nassar, T. K. & Shanklin, W. M., 612, 2450.
Nauck, E. G. & Weyer, F., 1382.
Nauta, W. J. H. & Gygax, P. A., 3097.
Navrátil, A., 1256.
Naylor, G. R. E., 411.
Neal, D. See Wild, J. J., 2357.
Neave, F. K. See Crossman, J. V. et al., 912.
—. See also Foot, F. H. et al., 1206.
Nechvatal, W., 3240.
Nedelkovitch, J., 1590.
Needham, D. M. See Chiu, C. Y., 2704.
Needham, G. M. See Karlson, A. G. et al., 598.
Needham, K. See Cullity, M. et al., 572.
Neely, R. A. & Nelson, M. G., 2242.
Nefed'ev, A. I., 679.
Negheme, A., Román, J. & Sotomayer, R., 1306.
Négre, L. & Bretey, J., 306.
— & Thomas, A. D., 355.
Neitz, W. O., 354
Nélis, P., Detroux, P., Lafontaine, A. & Legros, G., 666.
Nelson, A., 2796, page 654.
Nelson, A. A. See Fitzhugh, O. G. et al., 506.
Nelson-Jones, A., 1950.
Nelson, J. B., 1980.
Nelson, M. G. See Neely, R. A., 2242.
Nelson, M. M. & Evans, H. M., 483.
Nelson, R. H. See Dunlap, J. S. et al., 1825.
—. See also Luecke, R. W. et al., 1080.
Nemeček, V., 1221.
Neri, I., 1036.
Nesheim, R. O. & Johnson, B. C., 2319.
—. See also Johnson, B. C. et al., 3302.
Neter, E. & Gorzynski, G. A., 1934.
— ,— & Cass, W. A, 3160.
Neuhoff, H. See Asher, T. et al., 3751.
Neumann, A. L., Johnson, B. C. & Thiersch, J. B., 2972.
—. See also Johnson, B. C. et al., 3302.
Neumann-Kleinpaul, K., 1458.
— & Schebitz, H., 440.
Neuzil, E. See Pautrizel, R. et al., 421.
Nevens, W. B. See Johnson, B. C. et al., 1442, 2644.
Névot, A. See Guillot, G. et al., 3364.
Newburgh, L. H., 908.
Newiadomski, M. M., 779.
Newman, J. P., 1973.
—. See also Stockton, J. J., 1952.
Newton, O. M., 2489.
van Ngu, D. See Stein, G. J., 408.
Nickel, R. See Zietzschmann, O., 629, 2798.
Nicol, G., 2005.
Nicol, T. & Helmy, I. D., 2423, 3381.
Niederehe, H., 2942.
Niederman, D. J. See Snapp, R. H. et al., 457.
Niedermeier, W. See Stone, R. E. et al., 1497.
Nielson, F. W., 2459.
Niemineva, K. See Kinnunen, O., 1519.
Niethammer, A., page 339, 2524.
Nikitin, M. G. See Lukashov, I. I., 1674.
Nikitin, V. N., 2386.
Nilakantan, P. R. & Pande, P. G., 2515.
Nisbet, D. I. See Stamp, J. T. et al., 813.
Nishihara, H. See Smith, C. R. et al., 2233.
Nissen, N. I., Aagaard, K. & Flindt-Hansen, E., 2365.
Niven, C. F., Jr. See Evans, J. B. et al., 1577.
Niven, J. S. F. See Andrews, C. H., 3236, 3237.
Nixon, W. C. W. See Schild, H. O., et al., 2116.
Nižnánsky, F., 1301.
— & Koppel, Z., 1321.
—. See also Adámat, S., 1187.
Nobak, C. R. See Bloom, F. et al., 2312.
Noble, W. A. & Frame, J., 2095.
Nobrega, P. & Bueno, R. C., 1619.
— & Reis, A. S., 366.
Nock, W. S. See Griffitts, J. J., 2923.
Noer, B. See Granados, H. et al., 1070.
Nolan, M. O. See Berry, E. G. et al., 436.
Nordberg, B. K., 2509.
—. See also Isaksson, A. et al., 1371.
Nordqvist, P. See Bárány, E., 207.
Nordström, G., 2951.
Norris, K. R., Roulston, W. J. & Snowball, G. J., 110.
North-Lewis, D., 263.
Norton, C. L. See Erb, R. E. et al., 1440.
Norton, L. B. See Pimentel, D. et al., 3262.
Norval, J. See Soulsby, E. J. L. et al., 227.
Noskov, A. I. See Koroleva, V. P. et al., 3501.
Nottbohm, H. & Jacobs, K., 2689.
Nouffard, H. See Dubos, R., 1591.
Novak, M. See Hammond, C. W., 751.
—. See also Levine, S., 1659.
Nováková, E., 1050.
Novazzi, G., 1889, 2165, 3036.
Novotný, E., 1764.
Nufer, K. See Gutscher, V., 1381.
Nunes, D. S., 1914.
Nungester, W. J. & Williams, P. G., 903, page 59.
—. See also Sarber, R. W. et al., 1601.
Nutting, W. B., 1408.

O

Oakley, C. L., Batty, I. & Warrack, G. H., 3257.
Obel, N. J. & Schmiterlöw, C. G., 2123.
Oberling, C. See Roussy, G. et al., 2793.
Oberst, F. H. See Barner, R. D., 2814.
O'Dell, B. L., Whitley, J. R. & Hogan, A. G., 2973.
—. See also Hogan, A. G. et al., 794.
Odell, L. D. See Bernard, R. M., 1849.
Oehmichen, F.-O., 2658.

Oesterle, J. F. See Skinner, H. L. et al., 2196.
O'Farrell, J. D., 82.
Oglesby, G. See Rode, L. J. et al., 1639.
—. See also Schuhardt, V. T. et al., 1657.
van Oijen, C. F. & Willems, G. B. R., 2478.
Oker-Bloom, N., 3661.
O'Konski, C. T. See Gucker, F. T., Jr., 1551.
Olafson, P. & McEntee, K., 3327.
Olarte, J. See Angulo, J. J. et al., 1359.
Olbrycht, T., 3395.
Olbrycht, T. M., 2746.
Olds, D., Morrison, H. B. & Seath, D. M., 1868.
Olejnik, E. & Shneyerson, S., 1969.
Oleson, J. J. See Whitehill, A. R. et al., 519.
Oliver, J. P., 2780.
Olesiuk, O. M., 3593.
Olitsky, P. K. & Murphy, L. C., 3249.
— & Yager, R. H., 80.
Olitzki, L. & Oren, R., 967.
Oliver, J. See Lippman, R. W. et al., 3725.
Olney, J. F., 977.
Olouía, M. M. See Mayer, D. T. et al., 2415.
Olsen, C., Cook, R. H. & Blore, I. C., 2838.
Olsen, M. W. See Fraps, R. M., 1548.
Olsen, O. W. & Bracken, F. K., 113.
Olsen, S. J., 2471.
Olson, C., Jr., Blore, I. C., Woodring, F. R. & McGrath, C. B., 92.
— & Cook, R. H., 3652.
—, — & Brouse, E. M., 2089.
Olsson, N., 800.
Olsson, S.-E., 3687.
Olszewski, J. See Meessen, H., 630.
de Olveira, J. A. See Machado, A. M., 948.
O'Moore, L. B. See Hunter, W. M. D. et al., 150.
Onegov, A. P., Lagunov, M. R. & Mitrofanov, M. V., 2647.
Ooi, K. H. See Bruce-Chwatt, L. J., 426.
van Oordt, G. J. See Bullough, W. S., 3359
Oostenbrug, W. & Talsma, D., 2833.
Opie, E. L. & Rothbard, M. B., 2400.
Opsahl, J. C., Long, C. N. H. & Fry, E. G., 3744.
—. See also Smith, G. H., 3517.
Orchard, H. E. See McKenna, C. T., 2112.
Ordóñez. See Carrillo Cárdenas, C. et al., 960.
Oren, R. See Olitzki, L., 967.
Ornerod, W. E., 3196.
O'Roke, E. C. & Cheatum, E. L., 442.
O'Rourke, F. J. See Griffiths, R. B., 2621.
Orr, M. K. See Reid, A. F., 608.
Orskov, J., 3021.
Ortiz, O. P. See Calero, M. C., 1739.
Ortlepp, R. J., 446.
Orue, J. See Mornet, P. et al., 1979.
Osborne, H. G., 2855.
Osebold, J. W., Dickinson, E. M. & Babcock, W. E., 3158.
Osorio, M. T. See Mazzotti, L., 1039.
Osteen, O. L. See Schoening, H. W., 2029.
Oster, H. L. See Zarafonetis, C. J. D., 1719.
O'Sullivan, P. J. See Roberts, F. H. S. et al., 3276.
Otten, L., 1676.
Ottosen, H. E., 198, 1975, 3653.
Ouchterlony, O. See Laurell, G. et al., 334.
Ounais, A. See Cordier, G. et al., 728.
Overbeek, G. A., 2154.
Overman, J. R. & Friedewald, W. F., 3552.
Overman, R. R. Zilversmit, D. B. et al., 3050.
Owen, R. W. See Pollard, E. P. et al., 1743.
Owens, R D. See Shirley, R. L. et al., 1759.
Oxford, A. E., 2384.
—. See also van der Westhuizen, G. C. A. et al., 1431.
Oyaert, W., Quin, J. I. & Clark, R., 3352.
—. See also Clark, R. et al., 3354.
—. See also Quin, J. I. et al., 3351.

P

Pace, J. See Bentley, H. R. et al., 502, 3699.
Pacheco, G. & de Mello, M. T., 664.
Packham, E. A. See Polson, R. A., 1824.
Packalén, T. H. See Bergqvist, S., 642.
Pady, S. M., Peturson, B. & Green, G. J., 2453.
Paff, G. H. See Bloom, F. et al., 2312.
Page, K. W., 1744.
Pagnini, U., 88.
Pagot, J.-R., 2751.
Pahan, H. See Mattei, C. et al., 3186.
Pahnish, O. F. See Wiese, A. C. et al., 3300.
Paine, R., Butcher, H. R., Smith, J. R. & Howard, F. A., 1109.
Painter, R. A. See Stephan, S. A. R., 1746.
Paiva, O. M. See Chieffi, A. et al., 3754.
Palafox, A. L. See Rosenberg, M. M., 3003.
Paley, S. S. See Wiedman, G. P., 1279.
Pallas. See Courréges et al., 725.
Pallas, W. C. See Taylor, E. S. et al., 135.
Palmer, A. See Zuckerman, S. et al., 296.
Palmer, H. See Lange, H. F., 1167.
Palmer, J. G. See Cartwright, G. E. et al., 488, 3301.
Pálos, L. A. See Mosonyi, L. et al., 550.
Pálsson, E., 1191.
Palsson, P. A. See Sigurdsson, B., 164.
Pamukcu, A. M. See Akcay, S., 2863.
—. See also Akcay, S. et al., 2884.
Pande, P. G. See Nilakantan, P. R., 2515.
Pankaskie, J. E. See Dahm, P. A. et al., 2157, 2366.
Pankey, M. J. See Sadun, E. H. et al., 448.
Pankov, I. P., 867.
Pansy, F. See Donovick, R. et al., 18.
Pantaléon, J. See Blanchard, L. et al., 2737.
Pantridge, J. F., 3298.
De Paoli, P., 2269.
Pappenheimer, A. M., Daniels, J. B., Cheever, F. S. & Weller, T. H., 1688.
Paraf. See Lucas, A. et al., 968.
Paraf, A. See Lucas, A. et al., 3455.
Paraf, J. & Desbordes, J., 931.
Paramonov, S. J. See Waterhouse, D. F., 2300.
Paramonow, S. J., 422.
Parfentjev, I. A., 1484.
Parish, H. E., 2616.
Parisi, O., 1513.
Parker, J. R., 182.
Parker,, R. C., page 192.
Parker, R. R., Bell, E. J. & Stoenner, H. G., 399.
Parker, W. H., 3325.
—. See also Temperton, H. et al., 347.
Parkes. A. S. See Bruce, H. M., 257.
—. See also Polge, C. et al., 1864.
Parkin, B. S. See Malherbe, W. D., 2883.
Parks, H. F. See Montagna, W., 564.
Parnell, I. W. See Morgan, D. O. et al., 1742.
Parodi, A. S., 736
Parpart, A. K., 286.
Parr, L. W. See Friedlander, H. et al., 3440, 3469.
Parrish, D. B., Wise, G. H., Atkeson, F. W. & Hughes, J. S., 1834.
Parrot, G. See Parrot, L., 397.
Parrot, L. & Parrot, G., 397.
—. See also Sergent, Ed. et al., 2560.
Parry, E. W., 1643.
Parry H. B., 2907 .
Parvis, D. & Ceppellini, R., 674.
Pascal, R., 3585.
Pask, V. M. See Mackerras, I. M., 317.
Passey, R. D. & Dmochowski, L., 2054.
—, —, Lasnitzki, I. & Millard, A., 2955.
Paterson, A. B., 2491.
— & Winmill, A. J., 1873.
Paterson, J. C. & Cottral, G. E., 1106.
—, Mitchell, C. A. & Wallace, A. C., 1105.
—, Slinger, S. J. & Gartley, K. M., 1104.
Paterson, P. Y. See Thomas, L. et al., 1685.
Pattison, I. H., 5, 3443.
— & Holman, H. H., 3442.
—, Taylor, J. I. & Holman, H. H., 633.
—. See also Holman, H. H. et al., 634.
Paul, J. R., 1456.
Paul, T. M. See Anantakrishnan, C. P. et al., 548.
Pautrizel, R. & Barthe, C., 420.
—, — & Bailanger, J., 2637.
—, Bézian, A. & Neuzil, E., 421.
Pavelchek, E. See McCullough, N. B. et al., 32.
Pavilanis. V., 2591.
Pavlov, 68.
Pavlov, P., 112.
Pay, T. W. F., 2906.
Paykoc, Z. See Selvi, N., 2236.
Payne, E. H. See Ralston, R. J., 669.
Payne, W. J. A., Laing, W. A. & Raivoka, E. N., 3403.
Payzin, S., 398, 2241, 2600, 2601, 2920.
— & Golem, S. B., 2599.
Peacock, P. R. See Kirby, A. H., 1426.
Pearce, L., 2171, 3384.
Pearce, T. W. & Powell, E. O., 2816, 3091.
Pearl, A., Bethard, W. F. & Jacobson, L. O., 3099.
Pearson, C. C., 1003.
—. See also Farley, H. et al., 1101.
Pearson, J. K. L. ,313.
—. See also Lovell, R. et al., 1613.
Peart, A. F. W. See Gwatkin, R., 661.
Peck, S. M. & Li, K. K., 982.
Pecka, E. F., Jr. See MacKay, E. M., 1110.
Pedersen, E., 130.
—. See also Hogreffe, G., 2956.
Peer, K. C. See DeOng, E. R. et al., 2436.
Peeters, G. & Massart, L., 546.
—, — & Coussens, R., 2717.
—. See also Coussens, R. et al., 591.
Peisley, H. R., 2425.
Pelc, S. R. See Russ, S. et al., page 654.
Peli, 1311.
Pellegrini, D., 2625, 3193.
Pellerat, J. See Brion, A. et al., 2086.
Pellérdy, L., 1326.
—. See also Fridrichovszky, L., 2550.
—. See also Kotlán, A., 2552.
Pellissier, A., Troquereau, P. & Trinquier, E., 744.
—. See also Ceccaldi, J. et al., 1308.
Pelloux, A. & Decourt, P., 760.
Pencharz, R. See Lepkovsky, S. et al., 3303.
Penha, A. M. & D'Apice, M., 3162.
Penner, L. R. See Francis, T., Jr. et al., 96.
Pennington, D., 209.
Percival, G. P. See Keener, H. A. et al., 1072, 3666.
Perdrix, J., 1939.
Pereira, G. & Serra, J. A., 2178.
Perkins, F. T. See Evans, D. G. et al., 3363.
Perkins, L. E., 1452.
Perlowagora, A. See Hughes, T. P., 718.
Perrin, G., Saurat, P. & Verge, J., 30.
Perry, J. See Friant, M., 3361.
Perry, W. F. See Gemmell, J. P., 850.
Perry, W. L. See Long, D. A. et al., 3155.
Perry, W. L. M., page 192.
—. See also Bishop, P. M. F. et al., 2426.
Pescatore, H., 2493.
Pesonen, S., 3284.
Petek, M., 2279.
Peterman, H., 707.
Peters, D. See Wigand, R., 3514.
Peters, J. P., 789.
Petersen, W. E. See Blazter, K. L. et al., 3755.
—. See also Campbell, B. et al., 1832.
—. See also Darcy, A. E., 1865.
Peterson, E. H. & Hymas, T. A., 2262.
—. See also Jerstad, A. C. et al., 1021.
Peterson, J. E., 3508.

Petrov. See Courréges et al., 725.
Pettinga, J. J. See Kraneveld, F. C., 1725.
Petersen, B. See Pady, S. M. et al., 2453.
Petzel, G., 1185.
Peyser, A., page 339, 2807.
Pfadt, R. E. See Denning, D. G., 2303.
Pfeifer-Scheff, I. M. See Scheff, G. J., 673.
Pflugfelder, O., 906.
Philip, C. B., 2043.
Phillips, G. E. See Littman, M. L. et al., 1965.
Phillips, P. H. See Bowland, J. P. et al., 547.
—. See also Grummer, R. H. et al., 152.
—. See also Hale, W. H. et al., 1073, 1772.
Phillips, R. H. See Meyer, J. H. et al., 1075.
Phillips, R. W., 3086.
Phillipson, A. T., 559.
—. See also Carpenter, K. J. et al., 1123.
—. See also Hitchcock, M. W. S. et al., 1830.
—. See also Masson, M. J., 3358.
Philpot, V. B. & Smith, R. G., 2115.
Piat, B. L., 2257, 3577.
Pick, F., 1748, 2264, 2632.
Piekarski, G., 69, 682, 1994.
Pieniążek, J. See Kasprzak, E. et al., 3174.
Pierce, A. E., 1319.
— & Morgan, B.B., 343.
Piercy, P. L. See Rusoff, L. L., 1837.
Piercy, S. E., 3534.
Pierron. See Marotel, 1967.
Pikovski, M. & Doljanski, L., 462.
Pillemer, L. See Cinader, B., 830.
Pillet, J., Isbir, S. & Mercier, P., 293.
Pillsbury, D. M. See Kligman, A. M. et al., 3333.
Pimenta de Mello, R. See Cruz, W. O. et al., 2167.
Pimentel, D. & Dewey, J. E., 2302.
—, Schwardt, H. H. & Norton, L. B., 3262.
Pincher, C., page 598.
Pincus, G. & Shapiro, H., 2417.
— & Thimann, K. V., 2219.
Pini, T., 2496.
Pinkerton, H., 94.
—. See also Laskowski, L. et al., 2872.
—. See also Stanton, M. F. et al., 331.
Pinkiewicz, E., 3674.
Pinkos, J. A. See Johnson, B. C. et al., 2346.
Pinto, A. A., 3311.
Pirani, C. L., Stepto, R. C. & Sutherland, K., 3334.
Pirie, H. See Black, D. J. G. et al., 507.
Pirie, N. W., 2374.
—. See also Miles, A. A., 1240.
Piringer, W. A. & Piringer-Kuchinka, A., 949.
Piringer-Kuchinka, A. See Piringer, W. A., 949.
Pitesky, I. See Last, J. H. et al., 218, 1176.
Pitt, A. A. See Scheidy, S. F. et al., 197.
Pitts, F. W. See Boger, W. P. et al., 834.
Piwowarczyk, S., 1259.
Plaas, 1449.
van der Plank, G. M., 1869.
Plank, H. K., 755.
Plastridge, W. N., 3177.
—, Williams, L. F. & Roman, J., 258.
—. See also Easterbrooks, H. L., 2248.
—. See also Easterbrooks, H. L. et al., 1862.
Platt, H., 3319, 3651.
Plaut, G. W. E. & Lardy, H. A., 1514.
Du Plessis, S. & Raath, R. J., 1227.
Plough, H. H., Young, H. N. & Grimm, M. R., 1680.
Plum, C. M. See Bohn, C. L. S. et al., 553.
Plumlee, M. P. See Hansard, S. L. et al., 3090.
Plummer, P. J. G. See Gwatkin, R. et al., 3684.
—. See also Konst, H., 2109.
Poichet, R., 2677.
Poisson, J. See Blanchard, L. et al., 2737.
Polak, M. F. See Collier, W. A. et al., 2031.
Polge, C., Smith, A. U. & Parkes, A. S. 1864.
Poling, C. E. See Ruegamer, W. R., 513.
Pollard, E. P., Owen, R. W. & Evans, G. O., 1743.
Polley, J. R., Burr, M. M. & Gillen, A. L., 1358.
Polson, A. See Wentzel, L. M. et al., 1955.
Polson, R. A. & Packham, E. A., 1824.
Polya, J. B. & Dunn, P., 1427.
Polyakov, A. A., 1892.
— & Vranchan, Z. E., 2176.
Pomales, Lebrón, A., 39.
Pomeroy, B. S. See Sautter, J. H. et al., 696.
—. See also Zargar, S. L., 1019.
Pomriaskinsky-Kobozieff, N.-A. See Kobozieff, N., 880
Le Poncin, M., 1120.
Ponce de Leon, E. See Ruiz Sanchez, F. et al., 918.
Ponder, E. See MacLeod, J., 1836.
Pope, A. L. See Hale, W. H. et al., 1073, 1772.
Pope, H. & Smith, D. T., 309.
Popovici, A., Geschickter, C. F., Reinovsky, A. & Rubin, M., 1074.
Popp, L., 2871.
Popp, W. C. See Beeler, J. W. et al., 2374.
Poppensiek, G. C. See Koprowski, H. et al., 1360.
Popper, H. & Franklin, M., 169.
—, de la Huerga, J., Steigmann, F. & Slodki, M., 1787.
—. See also Koch-Weser, D. et al., 2370.
Poppmeier, A., 2735.
Porter, J. C., Shankman, S. & Melampy, R. M., 3737.
Porter, R. M. See Campbell, B. et al., 1832.
—. See also Kachmar, J. F. et al., 1076.
Porter, R. W. & Davenport, H. A., 3096.
Possompès, B., 2925.
Postma, C., 1853.
Potel, K., 3592.
—. See also Möhlmann, H., 1334.
Potenza, L. See Vogelsang, E. G., 2945.
Potossi, O., 102.
Potty, G. L., 601.
Pou, M. C., 2557.
Poul, J., 2879.
—. See also Donatien, A. et al., 3184.
Pounden, W. D., Ferguson, L. C. & Hibbs, J. W., 140.
— & Grossman, J. D., 1881.
— & Hibbs, J. W., 1066.
—. See also Conrad, H. R. et al., 141.
Powell, E. O See Pearce, T. W., 2816, 3091.
Powell, H. M. & Culbertson, C. G., 74.
Power, P. N., 3685.
Praetorius, E. & Kirk, J. E., 1847.
Pramer, D. & Heukelekian, H., 3731.
—, — & Ragotzkie, R. A., 1592.
Pratt, A. D. See Mather, R. E. et al., 1758.
Pratt, P. C. See Vorwald, A. J. et al., 1607.
Pratt, R. & Dufrenoy, J., 626 .
— & Youngken, H. W., page 598.
Prego, C. See Vanni, V. et al., 1042.
Pressman, D. See Sternberger, L. A., 412.
Preston, J. M. See Kulka, D. et al., 2446.
Prewett, L. P., 649.
Price, F. W., page 598.
Price, K. M. See Kneeland, Y., Jr., 2026.
Prier, J. E., 93.
— & Alberts, J. O., 1614.
— & Dart, G., 3597.
—, Millen, T. W. & Alberts, J. O., 730.
Priestley, F. W., 656.
—, Miheimid, M. A. & Dafaalla, N., 987.
Priestley, H., 763.
Prine, J. M. See Montgomery, A. V. et al., 2149.
Le Priol, A. See Jacotot, H. et al., 735.
Priouzeau, M., 3280.
Priselkova, D. O., 1731.
Proctor, D. F. See Woods, A. C., Jr. et al., 3721.
Prokůpek, K., 775, 2486, 2851.
Porsser, C. L., page 192.
—. See also Bishop, D. W. et al., 3120.
Prudder, J. F., Lane, M. & Meyer, K., 561.
Prudhomme, R. O. See Staub, A. M. et al., 10.
Puech, J. See Callot, J. et al., 746.
Puget. See Nanta et al., 1061, 2952.
Pugh, A. M. See Robinson, R. H. M. et al., 229.
Pugh, P. D. S. See Sellers, K. C., 2348.
Pullar, E. M., 2839.
Pullman, T. N. See Dern, R. J., 1220.
Purandare, N. M. See Dhayagude, R. G., 1958.
Purchase, H. S., 126.
Pusterla, F. See Hässig, A. et al., 1933.
Pyl, G. See Röhrer, H. et al., 2888.

Q

Quarante, M., 2630.
Quatrefages, H. See Carrère,, L., 1949.
Quérangal des Essarts, J. See Jaulmes, C. et al., 3128, page 482.
Quesnel. See Buck, 1315.
Quick, A. J., 1506.
Quimby, E. H. See Marinelli, L. D., et al., 826.
Quin, J. I., Oyaert, W. & Clark, R., 3351.
—. See also Clark, R., 3356.
—. See also Clark, R. et al., 3354.
—. See also Oyaert, W. et al., 3352.
—. See also van der Westhuizen, G. C. A. et al., 1431.
Quinchon. See Lucas, A. et al., 968.
Quinchon, C. See Lucas, A. et al., 3455.
Quinlan, J., van Rensburg, S. W. J. & Starke, N. C., 1459.
Quortrup, E. R. & Gorham, J. R., 2854.
—. See also Beach, J. R. et al., 2032.

R

Raafat, M. A. See Moon, F. E., 3700.
Raath, R. J. See Du Plessis, S., 1227.
Radan, M. & Rautenstein-Arasi, N., 48.
Radeleff, R. D. & Bushland, R. C., 824.
—. See also Bushland, R. C. et al., 2408.
Raffel, S., 13.
—. See also Clifton, C. E. et al., page 191, 1569.
Rafferty, J. A. See Strickland, B. A., Jr., 3109.
Ragotzkie, R. A. See Pramer, D. et al., 1592.
Ragsdale, A. C., Brody, S., Thompson, H. J. & Worstell, D. M., 2387.
—. See also Brody, S. et al., 2695.
Rainey, J. W., 2741.
Raistrick, H., 1490.
Raivoka, E. N. See Payne, W. J. A. et al., 3403.
Rajendran, M. S., 469.
Rako, A., 2179.
Ralli, E. P., 3122.
Ralph, P. H. See Scheff, G. J., 607.
Ralston, R. J. & Payne, E. H., 669.
Ramamurthy, V. See Srinivasan, V. R. et al., 3530.
Rama Rao, R. See Srinivasan, V. R. et al., 3530.
Ramaswamy, A. S. See Srinivasan, V. R. et al., 3530.
Ramírez Villamediana, J. J. & Vergani, F., 2058.
Ramnani, D. R. See Rao, S. B. V. et al., 2959.
Ramon, G., 1312, 1335.
—, Thiery, J. P. & Richou, R., 1352.
Rampas, J. & Gallia, F., 1684.
Randall, C. C., McVickar, D. L. & Doll, E. R., 2280.
Randall, J. T. & Friedlander, M. H. G., 3372.

Randolph, T. G. & Rollins, J. P., 796.
Rangaswamy, M. C. See Anantakrishnan, C. P. et al., 548.
Ranking, D. L., 3254.
Rannaud, 2858.
Ranque, J., Ranque, M. & Cabassu, H., 1310.
—. See also Giraud, P. et al., 3525.
Ranque, M. See Ranque J. et al., 1310.
Ransom, S. E. & Huebner, R. J., 3605.
Rao, C. K. & Hart, G. H., 239.
Rao, N. S. K. & Choquette, L. P. E., 2308.
Rao, R. S., 2573.
Rao, S. B. V., Das, J., Ramnani, D. R. & Iyer, S. G., 2959.
Rao, V. R .B. See Anantakrishnan, C. P. et al., 548.
Raoul-Duval, P. See Verge, J. et al., 638.
Rapoport, C. See Mithoefer, J., 3712.
Rapoport, S. See West, C. D., 1158.
Rasbech, N. O., 1546.
Rasch, S. See Thjøtta, T. et al., 2862.
Raschke, O., 2727.
Ras Crotto, N. P., 3380.
Rasmussen, A. F., Jr. & Stokes, J. C., 2274.
—. See also Hanson, R. P. et al., 2890.
Rather, L. J., 2102.
— & Addis, T., 1159.
Ratnoff, O. D. See Conley, C. L. et al., 853.
Rau, F. A. See Colby, R. W. et al., 1765, 1767.
Raubitschek, F. & Sagher, F., 1213.
Rausch, R. & Schiller, E. L., 3271.
Rautenstein, A. See Bornstein, S. et al., 2592.
Rautenstein-Arasi, N. See Radan, M., 48.
Ray, C. T. See Burch, G. E. et al., 1559.
Ray, D. H. See Hassall, A. et al., 3432.
Ray, H. N., 2259, 3199.
Rayski, C. See Morgan, D. O. et al., 1742.
Razza, F. & Battaglia, C., 1249.
Reagan, R. L., Smith, E. J. & Brueckner, A. L., 2915.
—, Werner, H. O., Schneck, D. M. & Brueckner, A. L., 1018.
Rebell, G. See Kligman, A. M. et al., 3333.
Receveur, P. & Hugaud, G., 99.
Recordier, A.-M. See Mattei, C. et al., 3186.
Reda, H., 1166.
Reddy, D. V. S. & Subrahmanyam, K. V., 3339.
Reebstein, H., 1284.
Reed, F. M. See Underwood, E. J. et al., 2078.
Reed, G. W. See Kilham, B. J. et al., 44.
Rees, R. J. W. See Hart, P. D'Arcy, 641.
Reesal, M. R. See Fairbairn, D., 2948.
Reeves, F. C. See Medlar, E. M. et al., 3460.
Regan, W. O. See Hogan, A. G. et al., 3293.
Reid, A. F. & Orr, M. K., 608.
Reid, R. L., 471, 2077, 3349.
Reifenstein, E. C. See Albright, F., 496.
Reilly, H. C. & Stock, C. C., 3287.
Reinach, N. & Louw, J. G., 1436.
Reineke, E. P. See Blaxter, K. L. et al., 3755.
Reinhard, K. R., 1297.
Reinhardt, R., 3114.
Reinovsky, A. See Popovici, A. et al., 1074.
Reis, A. S. See Nobrega, P., 366.
Rekers, P. E. & Marti, N., 3330.
Rekers, R. E., 3085.
Remlinger, P., 1346.
— & Bailly, J., 1340, 1349, 2570.
Rennie, J. C. See McFarlane, D., 3005.
van Rensburg, S. W. J. See Quinlan, J. et al., 1459.
Restuccia, M. See LeVeen, H. H. et al., 848.
Reuter, H. See Glässer, K., 2739.
—. See also Rievel, H., 1525.
Reynolds, M., 1127.
Rhind, D., 2767.
Rhoad, A. O., 1204.
Rhoades, H. E. See Woods, G. T. et al., 1779.
Rhodes, A. J. & Chapman, M., 1022.
—, Clark, E. M., Knowles, D. S., Shimada, F., Goodfellow, A. M., Ritchie, R. C. & Donohue, W. L., 97.
Rhodes, M., 333, 2444.
Rice, C. E., 1389, 1717.
— & Boulanger, P., 554.
— & Crowson, C. N., 754.
Rice, T. B., 318.
Rich, A. R., Berthrong, M. & Bennett, I. L., Jr. .2127.
—, Cochran, T. H. & McGoon, D. C., 1818.
Richards, N. A. See Bishop, P. M. F. et al., 530, 2426.
Richards, O. W., 261, 262, 606.
Richardson, C., 3131.
Richardson, E. M. See Dohan, F. C. et al., 3743.
Richet, C. & Delbarre, F., 795.
Richmond, L. & Cummings, M. M., 3149.
Richou, R. See Ramon, G. et al., 1252.
—. See also Thiery, J.-P., 414, 415, 1905.
Richter, C. P., 2156.
—. See also Mirick, G. S. et al., 1581.
Rickard, C. G. See Hutt, F. B. et al., 249.
Rickard, E. R., 2911, 3608.
Ridet, R. See Goret, P. et al., 54.
Riedel, B. B., 449, 980, 3274.
Riek, R. F., Hardy, M. H., Lee, D. H. K. & Carter, H. B., 1068.
— & Lee, D. H. K., 2698, 2699.
—. See also Roberts, F. H. S. et al., 3276.
Reimschneider, R., 3024.
Rievel, H. & Reuter, H., 1525.
Rigdon, R. H., Micks, D. W. & Breslin, D., 1992.
Riishede, J., 2998.
Riley, V., 2314, 2957, 2958.
Rimpau, W., page 59, 1570.
Rinehart, J. F. & Greenberg, L. D., 2341.
Ringrose, R. C. See Faddoul, G. P., 1795.
Rioux, J. See Guilhon, J., 2934, 2935.
Rislakki, V. See Mustakallio, E., 3346.
Ritchie, R. C. See Rhodes, A. J. et al., 97.
Rivera, M. G., 1527.
Rivera Rojas, M. R., 435.
Rivière, R. See Hulin, P. et al., 2635.
Rizvi, S. W. H., 742.
Roan, C. C. & Kearns, C. W., 2688.
Roark, D. B. & Herman, H. A., 3378.
Robbins, R. See Depkovsky, S. et al., 3303.
Roberts, E., Eisenstark, A. & Alberts, J. O., 655.
Roberts, E. W., 1734.
Roberts, F. H. S., 105.
— & Moule, G. R., 2926.
—, O'Sullivan, P. J. & Riek, R. F., 3276.
Roberts, H. W. See Comline, R. S. et al., 3350.
Roberts, M. A. See Bartholomew, J. W. et al., 3190.
Roberts, S. J. & Kiesel, G. K., 2500.
Roberts, T. E., 53.
Robertson, A., Thin, C. & Stirling, A. M., 1446.
Robertson, J. See Watts, P. S., 637.
Robertson, O. H. & Lester, W., Jr., 2224.
Robillard, E. See Crevier, M. et al., 2128.
Robin, A. H., 921.
Robin, V., Charton, A. & Morange, R., 3014.
—, Velu, H. & Lahure, R., 831.
Robineaux, R., Lebrun, J., Kourilsky, R. & Delaunay, A., 1882.
Robinet, A. H. See Hulin, P. et al., 2635.
Robinson, D. H., page 339.
Robinson, F. A., page 654.
Robinson, M. See Schwartz, L. et al., 981.
Robinson, M. C., 275, 276.
Robinson, R. H. M., Pugh, A. M. & Selbie, F. R., 229.
Robinson, T. J. See Curnow, D. H. et al., 2649.
Robinson, V. B., 3314.
Robinton, E. D., 3102.
Robison, W. L. See Burroughs, W. et al., 3299.
Rocha, G. L. See Villares, J. B., 3732.
Rocha e Silva, M., 1482.
Roche, J. & Desruisseaux, G., 3047.
Roche, L. See Dhers, V. et al., 1477.
Rockman, J. B. See Moore, A. M., 1476.
Rode, L. J., Oglesby, G. & Schuhardt, V. T., 1639.
—. See also Schuhardt, V. T. et al., 1657.
Roderuck, C. E. See Basinski, D. H. & Barber, M. A., 2338.
Rodier, J., 3698.
Rodriguez, I. G., 1457.
Roe, R. J., 1231, 3766.
Röhrer, H., Möhlmann, H. & Pyl, G., 2888.
Roepke, M. H. See Sautter, J. H. et al., 696.
—. See also Jansen, J. et al., 1783.
Rogers, G. H. See Bishton, R. L., 3098.
Rogers, H. See Stein, C. D., 1226.
Rogers, W. P., 121.
—. See also Lazarus, M., 2950.
—. See also Massy, V., 1059.
Rogosa, M. See Meigs, E. B. et al., 1248.
Rolfe, H. G., 2214.
Rolins, J. P. See Randolph, T. G., 796.
Rolle, M., 160.
— & Kalich, J., 1978.
Rollinson, D. H. L. See Soliman, K. N., 3504.
Rollo, I. M. & Williamson, J., 1989.
Roman, J. See Plastridge, W. N. et al., 258.
Román, J. See Neghme, A. et al., 1306.
Romanes, G. J., 2188.
Romer, C., 3173.
Rømer, O., 2470, 3135.
Romijn, C., 851, 1162, 2757.
Ronlick, H. A. See Hoster, M. S. et al., 1752.
Ronsse, P. See Lousse, A., 556.
Roofe, P. G., Hoecker, F. E. & Voorhees, C. D., 614.
Roose, D. J. See Gilbert, R. A. et al., 1131.
Rootes & Vietze, 2868.
Ropes, M. W. See Chaplin, H., Jr. et al., 3673.
Rosa, W. A. See Galofrée, E. J., 2066.
Del Rosario, L. J., 271.
Rose, A. L., 272, 273, 274.
Rose, D. See Gibbons, N. E., 2159.
Rose, F. L. See Fildes, P. et al., 2681.
Rose, H. M. See Gellhorn, A. et al., 1126.
Rosen, M. N. & Bischoff, A. I., 2598.
Rosenberg, M. M. & Palafox, A. L., 3003.
Rosenbluth, W. A., Galambos, R. & Hirsh, J. J., 544.
Rosenthal, S. R. & Elmore, F. H., 3178, 3179.
Rosmann, F., 581.
Ross, C. B. See Davis, V. E. et al., 806.
Ross, M. H. See Ely, J. O., 1119.
Ross, O. B., Jr., 3107.
Rosset, W. See Hauduroy, P., 2832.
Rossiter, R. C., 2964.
Rossiter, R. J. & Wong, E., 1505.
Roth, A. R. & Lindquist, A. W., 756.
—. See also Hoffman, R. A. et al., 757.
Roth, H., 2941.
Rothbard, M. B. See Opie, E. L., 2400.
Rothbard, S., Dooneief, A. S. & Hite, K. E., 924.
Rothman, S. See Snapp, R. H. et al., 457.
Rothschild, 2413.
Rottgardt, A. A. & Ezcurra, R., 705.
Roubaud, E. & Bourdie, M., 2876.
Roulston, W. J. See Norris, K. R. et al., 110.
Roumet, P. See Goret, P. et al., 2840.
Rountree, P. M., Barbour, G. H. & Thomson, E. F., 3132.
Rousselot, R. See Girard, H., 3252.
Roussy, G., Guérin, M. & Guérin, P., 2640.
—, Leroux, R. & Oberling, C., 2793.
Le Rouzic, 2260.
Rovenstine, E. A. See Batterman, R. C., 1884.

Rowlands, S. See Douglas, D. M. et al., 3694.
Rowlands, W. T. & Edwards, C. M., 939.
—. See also Brambell, F. W. R. et al., 1027, 1028.
Roy, A., Bhattacharya, S., Luktuke, S. N. & Bhattacharya, P., 2416, 3088, 3374.
Van Royen, A. H. H. & Boogaerdt, A., 217.
Roza, M., 1718.
Rozansky, R., Weber, D. & Gurevitch, J., 943.
Rubin, B. A., 525.
Rubin, M. See Popovici, A. et al., 1074.
Rubinstein, M. A., 266.
Ruddle, R. P. See Hewetson, R. W., 3402.
Rudolph, W., 1654.
Ruebke, H. J., 2092.
Ruegamer, W. R. & Poling, C. E., 513.
Ruffier, N. K. See Bernheimer, A. W., 3518.
Ruhe, C. H. W. See McLain, P. L. et al., 3103.
Ruiz Castañeda, M. See Carrillo Cárdenas, C. et al., 950.
Ruiz Sanchez, F., Ponce de Leon, E., Villegas, P. & Martin Novelo, A., Jr., 918.
—. See also Knight, V. et al., 320.
Rullier, J., 1891.
Rumball, P. & Milne, F. N. J., 144.
Rumery, R. E. See Filer, L. J. et al., 2648.
Rummel, W. See Driesen, W. et al,. 1135.
Rumney, W. J. & Schofield, F. W., 1782.
Rusoff, L. L. & Piercy, P. L., 1837.
Russ, S., Clark, L. H. & Pelc, S. R., page 654.
Russ, S. B. See Warren, J. et al., 75, 79, 1025.
Russel, B. & Anderson, D., 194.
Rutledge, E. K. See Hill, R. M. et al., 3294.
Rutlin, K., 1800.
Ruys, A. C., 1258.
Ryan, F. J., 992.
Rybak, B. See Gros, F. et al., 829.
Rydon, H. N. See Fildes, P. et al., 2681.

S

Saarinen, P. & Shaw, J. C., 1082, 1083, 1084.
Sabin, A. B. See Steigman, A. J., 3248.
van Saceghem, R., 721.
Sachs, B. A. See White, A. G., 167.
Sacquet, E., 3685.
Sadot, M. See Grimpret, J. et al., 3192.
Sadun, R. H., 769.
—, Keith, C. K., Pankey, M. J. & Totter, J. R., 448.
—. See also Chernin, E., 67.
Saeubelich, G. See Mitscherlich, E., 688.
Sagher, F. See Raubitschek, F., 1213.
Sagunay, R. A., 2556.
Saidel, H. F. See Chargaff, E., 1594.
St. John-Brooks, R. See Buchanan, R. E. et al., 2536.
Saint-Prix, L., 927.
Saito, K. See Kobayashi, R. et al., 1009.
Saley, P. I., 1915.
Salfelder, K., 1107.
Salisbury, G. W. & Vandemark, N. L., 3077.
—. See also Kendall, K. A. et al., 1432.
—. See also VanDemark, N. L., 1861.
Salisbury, R. M. See Winks, W. R. et al., 2995.
Salk, J. E., Laurent, A. M. & Baily, M. L., 3558
Salle. See Valade, 820.
Salmon, R. J. & May, C. D., 2326.
Salomon, L. See Thomas, A. et al., 2568.
Salton, M. R. J., 2131.
—. See also Gillespie, J. M. et al., 3368.
Salvin, S. B., 1648.
Samuels, L. T. See Gemzell, C. A., 545.
Sandage, C. N., Brandt, N. & Birkeland, J. M., 2827.
—. See also Brandt, N. G. et al., 1589.
Sandberg, E., 862.
Sanders, E. See Huddleson, I. F. et al., 1487.
Sanders, G. P. See Meigs, E. B. et al., 1248.
Sandor, G. & Skrobisz, C., 1029.
Sangster, G. See Joe, A., 3512.
Santi, A., 1665.
Saphir, O. & Lowenthal, M., 3686.
Sapiro, M. L., 1480.
Sarber, R. W., 3154.
—, Nungester, W. J. & Stimpert, F. D., 1691.
Sarkar, B. C. R., Luecke, R. W., Duncan, C. W. & Ely, R. E., 1835.
Sarles, W. B. See Shapiro, S. K., 1845.
Sartwell, P. E., 2981.
Saslaw, S. & Campbell, C. C., 1645, 2525.
—. See also Campbell, C. C., 1961, 2250.
Sass, H., 3407.
Satta, E., 2569.
Saunders, B. G., Brown, S. O. & Couch, J. R., 798.
Saunders, L. Z., 974.
Saurat, P. See Perrin, G. et al., 30.
Saurer, H., 2657.
Saurino, V. See Broadhurst, J. et al., 379.
Sautter, J. H., Pomoroy, B. S. & Roepke, M. H., 696.
Sautter, V. See Lépine, P., 2909.
Savage, B. M. See Sinclair, A. N. et al., 3393.
Sawyer, C. H., Everett, J. W. & Markee, J. E., 877.
Saylor, C. P., Brice, A. T. & Zernike, F., 2447.
Scaccini, A., 2403.
van der Schaaf, A., 593.
Schaefer, A. E. See Whitehair, C. K. et al., 156.
Schäfer, W., 1366, 2913.
Schaffenburg, C., Masson, G. M. C. & Corcoran, A. C., 1496.
Schäper, W., 2170.
Schalm, L. & Schulte, M. J., 609.
Schalm, O. W., 295.
Schambye, P. See Christensen N. O., 3679.
Scharrer, B. & Lochhead, M. S., 780.
Scharrer, K., 282.
Schaub, I. G., 2504.
—. See also Mirick, G. S. et al., 1581.
Schauser, W., 504
Schebitz, H. See Neumann-Kleinpaul, K., 440.
Scheff, G. J. & Pfeifer-Scheff, I. M., 673.
— & Ralph, P. H., 607.
Scheid, W., 985.
Scheidy, S. F., McManus, E. C., Tillson, E. K. & Pitt, A. A., 197.
Schenck, D. M. See Reagan, R. L. et al., 1018.
Schenk, M. L. See Simon, J. et al., 297.
—. See also Spencer, G. R. et al., 298, 2812.
Schenk, P., 790.
Schenker, J., 3362.
Schermer, J., 3509.
Schermer, S., 2682.
Scheunert, A. & Trautmann, A., page 654.
Schick, A. F. & Hass, G. M., 1170.
Schieren, J., 2662.
Schild, H. O., Fitzpatrick, R. J. & Nixon, W. C. W., 2116.
Schiller, E. L. See Rausch, R., 3271.
Schilling, E. L. See Earle, W. R. et al., 186.
Schindler, R., 203.
Schipper, G. See Mirick, G. S. et al., 1581.
Schlaak, W., 3018.
Schlenker, F. S. & Simmons, B. K., 1137.
Schlesinger, R. W., 1682.
Schloerb, P. R., Früs-Hansen, B. J., Edelman, I. S., Soloman, A. K. & Moore, F. D., 2132.
Schlossberger, H., 3513.
Schmid, R., 1788.
Schmidt, K., Dietz, O. & Weiss, H., 2411.
Schmidt, S., 3542.
Schmidt-Lamberg, H., 765.
Schmidt, S., 1337.
Schmiterlöw, C. G., 1838.
—. See also Obel, N. J., 2123.
Schmitt-Jubeau, H. See Turpin, R. et al., 1774.
Schmittle, S. C. & Mansfield, M. E., 1374.
—. See also Beamer, P. D. et al., 90.
Schneebeli, G. L. See Dougherty, T. F., 2380.
Schneider, B. See Demnitz, A., 3586.
Schneider, B. H. See Sieburth, J. McN. et al., 3012.
Schneiter, R. See Klob, R. W., 524.
Schnitzer, R. J., Kelly, D. R. & Leiwant, B., 344.
Schoechli, A., 231.
Schoenaers, F., 685, 3195, 3533.
Schoenbach, E. B. See Bryer, M. S. et al., 965.
—. See also Long, P. H. et al., 828.
Schönberg, F., 573, 3129, 3130.
Schoenewald, F. S., 292, page 192, 1904.
Schoening, H. W. & Osteen, O. L., 2029.
—. See also Dale, C. N. et al., 3568.
Schofield, F. W., 383.
— & Schollard, N. D. 493.
—. See also Rumney, W. J., 1782.
Schoijet, A., Seisdedos, C. & Tagle, I., 3569.
Scholtis, K See Grün, L., 1155.
Schorr, S. E. See Klein, M. et al., 2120.
Schubert, J. H., Stanford, S. M. & Tiffany, E. J., 3607.
Scott, J. H., 3727.
Scott, M. T., 2298.
—. See also Johnstone, I. L., 3627.
Schroeder, W. F. See Felsenfeld, O. et al., 1948.
Schröter, A., 2497.
Schubothe, H., 1884.
Schuh, V., 745.
Schuhardt, V. T., Rode, L. J., Oglesby, G. & Lankford, C. E., 1657.
—. See also Rode, L. J. et al., 1639.
Schulte, M. J. See Schalm, L., 609.
Schultze, E. See Holt, H. D. et al., 925.
Schultze, M. O., 484.
Schulze, W. & Stubenrauch, M. E., 1462.
Schuurmans, R. See Clarenburg, A. et al., 1627.
Schwabe, C. W., 1054.
Schwardt, H. H. See Pimentel, D. et al., 3262.
Schwarting, V. See Feldman, W. H. et al., 689.
Schwartz, B., Imes, M. & Foster, A. O., 2607.
Schwartz, I. L. See de Bodo, R. C. et al., 3040.
Schwartz, L., Robinson, M. & Gant, J. Q., 981.
Schweizer, Z. von R., 2987.
Schwochow, K. See Kliesch, J., 1543.
Scollard, N. D. See Schofield, F. W., 493.
Scott, E. N. See Gillespie, H. B. et al., 404.
Scott, G. W., Jr. See Erb, R. E. et al., 1440.
Scott, H. M. See Waters, N. F. et al., 793.
Scott, M. L., 3309.
Scott, M. T. See Waterhouse, D. F., 3261.
Scott, W. J. See Alford, L. R. et al., 3367.
—. See also Gillespie, J. M. et al., 3062, 3063, 3368.
Scruggs, J. H. See Damon, S. R., 970.
Seath, D. M., 596.
—. See also Olds, D. et al., 1868.
Seckfort, H. See Goebel, A., 2399.
Seddon, H. R., 2652.
Seebohm, P. M. See Sherman, W. B. et al., 1390.
Seeger, K. C., Lucas, W. C. & Tomhave, A. E., 348.
Seekles. See Beijers, J. A. et al., 2670.
Seekles, L. & Van Asperen, K., 485.
Seelemann, M. & Tilgner, K., 2480.

Segal, D. B. See Hassall, A. et al., 3432.
Segal, M. S. See Gaensler, E. A. et al., 1129.
Segaloff, Z. See Davis, W. D., Jr. et al., 3037.
Seghetti, L. & Firehammer, B. D., 1038.
Seibel, L., 2901.
Seibert, B. & Kent, P. W., 2825.
Seibert, F. See Tukey, J. W. et al., 302.
Seibert, F. B., 648.
— & Seibert, M. V., 303.
Seibert, M. V. See Seibert, F. B., 303.
Seijffers, S. M., 1651
Seisdedos, C. See Schoijet, A. et al., 3569.
Selbie, F. R. See Robinson, R. H. M. et al., 229.
Selçuk, H., 2756, 3681.
Seligman, A. M., Chauncey, H. H. & Nachlas, M. M., 2383.
Sellers, A. F. & Hemingway, A., 3718.
—. See also Boyd, W. L., 246.
Sellers, K. C. & Pugh, P. D. S., 2348.
—. See also Field, H. I., 1971, 1972.
Selvi, N. & Paykoc, Z., 2236.
Selye, H., 2101, 2606, 3115.
— & Timiras, P. S., 212.
—. See also Timiras, P. S., 538.
Selzer, G. See Casals, J. et al., 2899.
Sen, N. K. See Aun, L. K. et al., 2844.
Seneca, H. & Henderson, E., 2268.
Sénéchal, F. See van Deinse, F., 647, 3462.
Seneviratne, L. J. de S., 2766.
Serafinowicz, H. See Kasprzak, E. et al., 3174.
Serebryakova, E. K See Vashkov, V. I., 1799.
Sergent, E., 1803.
Sergent, Ed., Donatien, A. & Parrot, L., 2560.
— & Sergent, Et , 2740.
Sergent, Et. See Sergent, Ed., 2740.
Serra, J. A., 2220.
—. See also Pereira, G., 2178.
Sévin, A. See Gernez-Rieux, C. et al., 3454, 3463.
Sewell, O. K. See Bassett, E. G., 2422.
—. See also White, E. P. et al., 825.
Sewell, P. & Hawking, F., 1421.
Sewell, R. F. See Edwards, H. M. et al., 2323.
Sexton, W. A., 1245.
Seys, H. See Marneffe, H., 1350.
Seys, R. See van Deinse, F. et al., 1267.
Sgambati, A., 3399
Shaffer, J. See Spink, W. W. et al., 668.
Shanklin, W. M. See Nassar, T. K., 612, 2450.
Shankman, S. See Porter, J. C. et al., 3737.
Shanks, P. L., 324.
Shapiro, D, M. & Gellhorn, A., 2074.
Shapiro, H., 335.
—. See also Pincus, G., 2417.
Shapiro, S. K. & Sarles, W. B., 1845.
Sharabrin, I. G., 2193.
Sharp, D. G. See Beard, D. et al., 2316.
Sharpey-Schafer, E. P. See Dornhurst, A. C., 1840.
Shaw, E. W. See Melnick, J. L. et al., 393.
Shaw, G. D. See Macaulay, J. W., 2875.
Shaw, J. C., 1081.
—, Hatziolos, B. C. & Leffel, E. C., 1755.
—. See also Saarinen, P., 1082, 1083, 1084.
Shaw, J. H. See Kite, O. W. et al., 1112.
Shawver, C. B. See Edwards, H. M. et al., 2323.
Shear, M. J. See Greenspan, E. M. et al., 2076.
—. See also Leiter, J. et al., 2075.
Shearer, A. R. See Dolman, C. E. et al., 49.
Sheather, A. L., 888
Shechmeister, I. L., 1355.
— & Goldberg, L. J., 916
Sheehy, E. J., 149.
Sheikh, A. H. See Cameron, G. R. et al., 3689.
Sheldon, W. H., Cummings, M. M. & Evans, L. D., 2230.
Shelton, E. See Earle, W. R. et al., 136.
Shepherd, H. E., 3765.
Sher, H. See Yutuc, L. M., 690.
Sherman, F. G. & Grant, B. M., 3092.
Sherman, W. B., Menzel, A. E. O. & Seebohm, P. M., 1390.
Sherris, J. C. & Florey, M. E., 1906.
Sherry, S. & Goelea, J. P., 3714.
Shideler, R. K. See Woods, G. T. et al., 1779
Shiels, D. O., 1113.
Shier, F. L. See Underwood, E. J., 3308.
Shimada, F. See Rhodes, A. J. et al., 97.
Shimizu, T. & Kawakami, Y., 2579, 2582.
Shimkin, M. B., 618.
Shirley, R. L., Owens, R. D. & Davis, G. K., 1759.
Shive, W. See Williams, R. J. et al., page 272, 3436.
Shneyerson, S. See Olejnik, E., 1969.
Shock, N. W. See Miller, J. H. et al., 563.
Shoemaker, R. N., 3404.
Shore, C. See Wolfson, W. Q. et al., 1846.
Shorr, E. See Zweifach, B. W., 3779.
Short, A. R. See Tidy, H., page 654.
Short, E. I. See Brownlee ,G., 1809.
Shoshkes, M., Geyer, R. P., Yee, G. S. & Stare, F. J., 3295.
Sidky, M. M., 3603.
Siebenmann, C. O., 310.
Sieburth, J. McN., Gutierrez, J., McGinnis, J., Stern, J. R. & Schneider, B. H., 3012.
Siegel, B. M. See Last, J. H. et al., 1176.
Siegert, R., Simrock, W. & Ströder, U., 1383.
Siem, R. A., Smith, B. C. & McLimans, W. F., 2898.
Sierens, G. See Coussens, R. et al., 591.
—. See also Ide, M., 3316.
Sifferlen, J. See Vittoz, A. et al., 1922.
Siffert, R. S., 3713.
Sigiura, K., Hitchings, G. H., Cavalieri, L. F. & Stock, C. C., 133.
Signorini, L. F. See Davoli, R., 2919.
Sigurdsson, B. & Palsson, P. A., 164.
Silber, E. N. See Stamler, J. et al., 1785.
Silberberg, M. & Silberberg, R., 1425, 2322.
Silberberg, R. See Silberberg, M., 1425, 2322.
Silbersiepe, E. & Berge, E., 3435.
Silberstein, W. See Kauffmann, F. et al., 3167.
da Silva, A. G., 3033.
Da Silva, E. M. See Cruz, W. O. et al., 2167.
da Silva Leitão, J. L., 2060.
Silver, H. K. & Kempe, C. H., 889.
Silver, M. L., 2356.
Silverberg, R. J. See Faber, H. K. et al., 2036.
Silverman, S. J. See Elberg, S. S., 670.
Silverstone H. & Tannenbaum, A., 458.
Siminovitch, L. See Lwoff, A. et al., 3599.
Simmonds, S. & Fruton, J. S., 3521.
Simmonds, W. L., 1820, 2183.
Simmons, B. K. See Schlenker, F. S., 1137.
Simmons, G. C. & Cottew, G. S., 991.
Simmons, R. J., 1237.
Simmons, S. W. See Cole, E. L. et al., 2369.
Simms, B. T., 660, 2783, 3744.
Simon, J., Spencer, G. R., Kraft, M. E. & Schenk, M. L., 297.
—. See also Bourg, R., 589.
—. See also Spencer, G. R. et al., 298, 2812.
Simonatti, E., 1448.
Simonsen, M. & Christensen, R., 1392.
—. See also Teilum, G. et al., 3020.
Simpson, M. E. See Moon, H. D. et al., 456.
Simpson, S., 3767.
Simpson, S. D. & Young, L., 1798.
Simrock, W. See Siegert, R. et al., 1383.
Sinclair, A. N., Savage, B. M. & Wood, J. N., 3393.
Sinclair, D. P. See Ewer, T. K., 3277.
Sinev, A. V., 2653.
Singer, C., 1241.
Singer, R. B., 3031.
Singman, D. See Lepkovsky, S. et al., 3303.
Sircom, G. See Hediger, H., 1902.
Siri, W. E., 2215.
Siu, R. G. H. See Mandels, G. R., 1875.
Sjollema, B., 2965.
Skaller, F. & Grigg, G. W., 2429.
Skeggs, L. T., Jr., Leonards, J. R., Heisler, C. & Kahn, J. R., 1219.
Skelton, F. R., 481.
Skinner, H. L., Conn, J. K. & Oesterle, J. F., 2196.
Skipper, H. E., Bell, M. J. & Chapman, J. B., 129.
—, Chapman, J. B. & Bell, 2317.
Skoda, R., 2836.
Skrobisz, C. See Sandor, G., 1029.
Skryabin, K. I. & Dobrokhotov, A. M., 3369.
Slade, H. D. & Knox, G. A., 1656
Slagsvold, L. See Breirem, K. et al., 808.
Slagsvold, P., 1773.
Slanetz, C. A. See Atkinson, W. B. et al., 2334.
—. See also Elftman, H. et al., 2335.
Slanetz, L. W. & Allen, F. E., 299.
Slater, E. C. See Kratzing, C. C., 213.
Slavin, G. See Stuart, P., 3328.
—. See also Wilson, C. D., 1872.
Slein, J. B. See Wright, G. G., 3448.
Slijper, E. J., 3753.
van der Slikke, L. B. See Keuning, F. J., 749.
Slinger, S. J. See Paterson, J. C. et al., 1104.
Sloan, J. E. N., 505.
Slodki, M. See Popper, H. et al., 1787.
Sloviter, H. A., 2391, 3761.
Sluiter, C. P., 1723.
Smadel, J. E. See Warren, J. et al., 79.
Smith, A. G. See Hilier, J. et al., 1937.
—. See also Mudd, S. et al., 1936.
Smith, A. U., 2048.
—. See also Polge, C. et al., 1864.
Smith, B. C. See Siem, R. A. et al., 2898.
Smith, B. F. & McShan, W. H., 2263.
Smith, C. R., Nishihara, H., Golden, F., Hoyt, A., Guss, C. O. & Kloetzel, M. C., 2233.
Smith, D. A. See Jones, L. M. et al., 1118.
Smith, D. E. See Minnich, V. et al., 2342.
Smith, D. J. N. See Bishop, P. M. F. et al., 530.
Smith, D. T. See Pope, H., 309.
Smith, E. J. See Reagan, R. L. et al., 2915.
Smith, G. H. & Opsahl, J. C., 3517.
Smith, H. A. See Jones, L. M. et al., 1118.
Smith, H. R., 1567.
Smith, H. W., 537.
— & Buxton, A., 3480.
—. See also Cruickshank, J. C., 653.
Smith, J. R. See Paine, R. et al., 1109.
Smith, L. H., Jr. See Merrill, J. P. et al., 562.
Smith, L. W. See Wuerthele-Caspe, V. et al., 1428.
Smith, M. J. H. See Meade, B. W., 3044.
Smith, P. F., Morton, H. E. & Leberman, P. R., 1653.
Smith, P. K., 2680.
—. See also Lepper, M. H. et al., 1807.
—. See also Miller, Z. B. et al., 2155.
Smith, R. C. See Dahm, P. A. et al., 2157.
Smith, R. G. See Philpot, V. B., 2115.
Smith, S. E., Becker, D. E., Loosli, J. K. & Beeson, K. C., 151.
—. See also Becker, D. E., 2139, 3667.
Smith, S. G., 3668.
— & Lasater, T. E., 2330
Smith, V. R. See Marion, G. B. et al., 3078.
Smith, W. & Westwood, J. C. N., 3223.
—. See also Wilson, D. R. et al., 2283.

Smith, W. E., Hillier, J. & Mudd, S., 988.
Smith, W. S., 1761.
Smithburn, K. C. See Dick, G. W. A. et al., 76.
Smithwick, B. See Thomas, L. et al., 1685.
Smyth, R. See Underwood, E. J. et al., 2078.
Snapp, R. H., Niederman, D. J. & Rothman, S., 457.
Sniffen, R. C., 1171.
Snowball, G. J. See Norris, K. R. et al., 110.
Snowman, R. T. See Stewart, W. B. et al., 2081.
Sobek, V., 871, 1192, 1193, 1531.
Sodeman, W. A., page 339, 2792.
Södergren, L. O., 1199.
Soehring, K. & Becher, F., 2194.
Sognnaes, R. F. See Kite, O. W. et al., 1112.
Sohier, R., 1587.
— & Moret, R., 3760.
Sokolić, A., 1056.
Solinan, K. N. & Rollinson, D. H. L., 3504.
Solinas, N. See Coceani, A., 2520.
Solis, J. A., 2528.
Solomon, A. K., 192.
—. See also Schloerb, P. R. et al., 2312.
Solonitsuin, M. O., 657.
Solotorovsky, M., Gregory, F. J. & Stoerk, H. C., 2829.
Sommer, E., 2094.
Sommerville, T. See Andrewes C. H. et al., 1705
Sompolinsky, D., 1957, 2099.
Sotomayer, R. See Neghme, A. et al., 1306.
Soulsby, E. J. L., Norval, J. & Wilson, J. E., 227.
Southcott, W. H., 3278.
Spaander, J. See Verlinde, J. D., 1007.
Spadoni, M. A. See Fabriani, G. et al., 1450.
Spain, D. M., Childress, W. G. & Fishler, J. S., 2231.
— & Molomut, N. 2232.
Sparapani, J. C., 2499.
Spears, H. N. See Doyle, T. M., 2831.
Spector, H. See Adamstone, F. B., 146.
Spence, T., 2057.
Spencer, A. G., 1216.
Spencer, E. Y. See Galgan, M. W. et al., 1443
Spencer, G. R. & Angevine, D. M., 913.
—, Kraft, M. E., Simon, J. & Schenk, M. L., 298.
—, Simon, J. & Schenk, M. L., 2812.
—. See also Simon, J. et al., 297.
Spendlove, G. A. See Fish, C. H., 2410.
Spicer, S., 1132.
Spies, H. W. See Caldwell, E. R., Jr. et al., 3016.
Spies, T. D., Suarez, R. M., Lopez, G. G., Milanès, F., Stone, R. E., Toca, R. L., Aramburu, T. & Kartus, S., 839.
—. See also Stone, R. E. et al., 1497.
Spink, W. W., 3133.
— & Anderson, D., 1637.
—, Hall, W. H., Shaffer, J. & Braude, A. I., 668.
—. See also Braude, A. I., 966.
Spinks, A., 526, 1810.
Spiridonov, F. M., 234.
Spitznagel, J. See Mirick, G. S. et al., 1581.
Spizizen, J. See Blanchard, M. C. et al., 738.
Splitter, E. J., 332, 1672, 1993, 1997, 3536.
— & Williamson, R. L., 1996.
Spörri, H., 816, 2430
Spooner, E. T. C. See Evans, R. J., 809.
Sprinz, H. See Horstmann, D. M. et al., 3572.
Sprunt, D. H. See McVay, L. V. et al., 663, 695.
Spy, C. See Gernez-Rieux, C. et al., 3454.
Squiers, C. D. See Mayer, D. T. et al., 2415.
Squire, F. A., 106.
Squire, J. R. See Cruickshank, C. N. D., 1125.
Srinivasan, V. R., Ramamurthy, V., Ramaswamy, A. S., Rama Rao, D. & De, N. N., 3530.
Stableforth, A. W., 911, 1281.
Stacey, M. See Fildes, P. et al., 2681.
Staffe, A. & Darguzas, V., 1004, 2567.
Stafseth, H. J. See Chang, K., 953.
—. See also Gray, M. L. et al., 2837.
—. See also Hsuing, G.-D. et al., 815.
Stahler, L. M. & Whitehead, E. I., 1472.
Stallybrass, C. O., 748.
Stamler, J., Silber, E. N., Miller, A. J., Akman, L., Bolene, C. & Katz, L. N., 1785.
Stamp, J. T., McEwen, A. D., Watt, J. A. A. & Nisbet, D. I., 813.
—, Watt, J. A. & Jamieson, S., 743.
—. See also McEwen, A. D. et al., 3566.
Standgaard, E., 1260.
Stanford, S. M. See Schubert, J. H. et al., 3607.
Stanley, N. F., 1963, 2297.
Stanton, M. F., Laskowski, L. & Pinkerton, H., 331.
—. See also Laskowski, L. et al., 2872.
Stanyon, J. H., 3637.
Stare, F. J. See Shoshkes, M. et al., 3295.
Starke, J. S., 575.
Starke, N. C., 1517.
—. See also Quinlan, J. et al., 1459.
Starkey, H. & Aubert, E., 1120.
Staub, A. M., Prudhomme, R. O. & Grabar, P., 10.
Steber, M. S. See Gillespie, H. B. et al., 404, 405.
Steck, W., 2587, page 654.
Steel, J. D. & Whittem, J. H., 1013.
—. See also Keep, J. M. et al., 1694.
—. See also McGovern, V. J. et al., 2277.
Steele, J. H., 363.
Steen, E., 2860, 3204.
— & Kass, E., 3203.
—. See also Kass, E., 2885, 2886.
Steenberg, E. See Jungeblut, C. W., 372.
Steenken, W., Jr., 3146.
Stefanova, E. P., 3137.
Stegenga, T., 1644, 3071.
Steiger, W. A. See Bellet, S. et al., 2354, 2355.
Steigman, A. J. & Sabin, A. B., 3248.
Steigmann, F. See Popper, H. et al., 1787.
Stein, C. D. & Rogers, H., 1226.
Stein, E., 3232.
Stein, G. J. & van Ngu, D., 408.
Stein, I. F., Jr. & Meyer, C. F., 2118.
Stein, L. See Green, T. W., 1283.
Stein, T. See Looney, J. M., 975.
Steiner, P. E. & Loosli, C. G., 455.
Steinmetzer, K., page 60.
Stempen, H., 1623 .
Stenius, P. I., 1691, 2282.
Stenius, R., 1919.
Stépánek, M., 1907.
Stephan, S. A. R., 2631.
—, Kaschula, V. R. & Canham, A. S., 2501.
—, Turner, S. G. & Painter, R. A., 1746.
Stepto, R. C. See Pirani, C. L. et al., 3334.
Sterling, K. & Gray, S. J., 3717.
Stern, J. R. & McGinnis, J., 2963.
—. See also Sieburth, J. McN. et al., 3012.
Stern, K. See Davidson, I., 1720.
Stern, T. N. See Zilversmit, D. B. et al., 3050.
Sternberger, L. A. & Pressman, D., 412.
Sternburg, J., Kearns, C. W. & Bruce, W. N., 425.
Sterne, M. See Wentzel, L. M. et al., 1955.
Sterzl, J. & Křeček, J., 522.
—. See also Křeček, J. et al., 1982.
Stetson, C. A. & Good, R. A., 3617.
Stetson, C. A., Jr., 3618.
Stevens, M. K. See Stirling, A. C. et al., 2181.
Stevenson, I. L. See Anderson, G. W. et al., 2842.
Stevenson, W. G. See Trussell, P. C., 2482.
Steward, J. S., 2311, 3625.
Stewart, A. C., Barnum, D. A. & Henderson, J. A., 1479.
Stewart, C. M, 1093, 1095, 1097.
Stewart, C. P. See Wilkinson, A. W. et al., 2137.
Stewart, D. F., 1048, 2310, 3281.
Stewart, F. S. & McKeever, J. D., 2184.
Stewart, G. F. See Winter, A. R. et al., 1524.
Stewart, R. E., 2980.
Stewart, W. B., Yuile, C. L., Claiborne, H. A. Snowman, R. T. & Whipple, G. H, 2081.
—. See also McKee, F. W., 1169.
—. See also Yuile, C. L. et al., 2080.
Steyn, D. G., 973, 2372.
Stigler, R., 2758.
Stimpert, F. D. See Sarber, R. W. et al., 1601.
Stirling, A. C., Stevens, M. K. & Lawley, D. N., 2181.
Stirling, A. M. See Robertson, A. et al., 1446.
Stirnimann, J., 490.
Stitinsky, F. See Bonvallet, M. et al., 2724.
Stock, C. C. See Reilly, H. C., 3287.
—. See also Sigiura, K. et al., 133.
Stockton, J. J. & Newman, J. P., 1952.
Stoddard, R. B., 2381.
Stöckli, A., 2189.
Stöffler, H. See Meyn, A., 3365.
Stöhr, R. See Holzer, F. J., 1794.
Stoenner, H. G., 3172.
—. See also Luoto, L. et al., 3604.
—. See also Parker, R. R. et al., 399.
Stoerk, H. C. See Bjorneboe, M. et al., 3614.
—. See also Solotorovsky, M. et al., 2829.
Stoker, M. G. P., 1380.
—, Coombs, R. R. A. & Bedson, S. P., 407.
— & Marmion, B. P., 1680.
—. See also Marmion, B. P., 1379.
Stokes, J., 2039.
—. See also Henle, W. et al., 1703.
Stokes, J., Jr. See Blanchard, M. C. et al., 738.
—. See also Drake, M. E. et al., 1704.
Stokes, J. C. See Rasmussen, A. F., Jr., 2274.
Stokstad. E. L. R. & Jukes, T. H., 2344.
Stolterman, G. H., Bernheimer, A. W. & MacLeod, C. M., 3619.
Stone, J. D., 2007.
—. See also Burnet, F. M. et al., 1026.
Stone, R. E., Spies, T. D. & Niedermeier, W., 1497.
—. See also Spies, T. D. et al., 839.
Stone, W. M. See Todd, A. C. et al., 2943.
Stoner, H. B., 535.
— & Green, H. N., 1521.
—. See also Green, H. N., page 191, 2216.
Storaasli, J. P. See Friedell, H. L., 193.
—. See also Weisberger, A. S. et al., 219.
Storey, C. M. See Zinsser, H. H. et al., 3084.
Storey, N. E. See Hoggarth, E. et al, 930.
Stormont, C., 2709.
Stout, A. P., page 339.
Stowell, R. E. See Tsuboi, K. K. et al., 2359.
Stribley, R. C. See Dohan, F. C. et al., 3743.
Striebich, M. J. See Dalton, A. J. et al., 3724.
Strickland, B. A., Jr. & Rafferty, J. A., 3109.
Strikwerda, R., 3378.
Stroes, J. See Tervoert, F. W. et al., 884.
Strong, L. C., 1751.
— & Hollander, W. F., 3654.
Strüder, U. See Siegert, R. et al., 1383.
Strugger, S., 2753.
Strumia, M. M., 891.
Strykker, G. See Donovick, R. et al., 18.
Stryszak, A., 2163.
Strzelecki, B., 2819.
Stuart, J. See Jamieson, S., 296.
Stuart, K. C. See Tervoert, F. W. et al., 884.
Stuart, P., 3499.
—, Buntain, D. & Langridge, R. G., 3470.
— & Slavin, G., 3328.

Stuart, R. D., 1212.
—. See also Alston, J. M. et al., 2533.
Stuart-Harris, C. H. See Bedson, S. P. et al., page 653.
Stubbs, E. L., 166, 787.
Stubenrauch, M. E. See Schulze, W., 1462.
Studer, R., 1116.
Stünzi, H., 726, 2069.
—. See also Butsch, A., 1966.
Stunz, D. I. See Harwood, P. D., 3529.
Stura, C. A., 687, 1002.
Sturkie, P. D., 2700.
Sturm, E. See Murphy, J. B., 463.
Suarez, R. M. See Spies, T. D. et al., 839.
Subrahmanyam, K. V. See Reddy, D. V. S., 3339.
Subrahmanyan, V. & Sur, B. K., 2318.
Suganuma, J. See Fujita, A. et al., 2382.
Sugawa, Y., Mochizuki, H. & Yamamoto, S., 2576, 2581.
Sugg, J. Y., 1681.
Sugiura, K. & Arkin, A. M., 1064.
—. See also Arkin, A. M., 453.
Sullivan, W. N. See McBride, O. C. et al., 759.
Sulman, F. G & Twerski, J., 205.
Sumner, J. B. & Myrbäck, K., page 482, page 654.
Sumner, K. C. See Campbell, A. M. G. et al., 329.
Sun, Y.-P., 534.
Sunde, M. L., Cravens, W. W., Elvehjem, C. A. & Halpin, J. G., 805.
Sunderman, F. W. & Boerner, F., page 339, 2799.
Suntzeff, V. See Carruthers, C., 134.
Sur, B. K. See Subrahmanyan, V., 2318.
Sure, B. & Easterling, L., 2971.
Sussman, M. L., 1507.
Sutherland, A. K., 1100.
—. See also Beamer, P. D. et al., 90.
—. See also Kenny, G. C. et al., 510.
—. See also Winks, W. R. et al., 2995.
Sutherland, K. See Pirani, C. L. et al., 3334.
deSuto-Nagy, G. I. See Waters, L. L., 817.
Sutton, G. D., 301.
Sutton, T. S. & Esh, G. C., 3291.
—. See also Conrad, H. R. et al., 141.
—. See also Meites, S. et al., 2395.
—. See also Warner, R. G., 3292.
Svedberg, B., 2490.
Svenkerud, R. R., 2636.
Swainson, O. S., 3420.
Swales, W. E., 346, 1001, 3526.
Swank, R. L. & Adams, R. D., 3676.
Swann, H. G., Montgomery, A. V., Davis, J. C., Jr. & Mickle, E. R., 2148.
—. See also Montgomery, A. V. et al., 2149.
Swedberg, B., 933.
Sweet, J. D., Martin, S. M., Wallace, C. N. & Elsasser, T. H., 3702.
Swellengrebel, N. H., 2555.
Swenson, F. R., 481.
Swenson, M. J., 2705.
Swierstra, D., 2061, 3070.
—. See also Doeksen, J. et al., 1045.
Sychkov, N. V. See Koroleva, V. P. et al., 3501.
Sykes, F., 2804, page 654.
Sykes, J. G. & Mixner, J. P., 3736.
Symes, C. B., 843.
Symmers, W. St. C. & Thomson, A. P. D., 452.
Sypesteyn, A. K. See Elsden, S. R., 2141.
Syverton, J. T., Dascomb, H. E., Koomen, J., Jr., Wells, E. B. & Berry, G. P., 781.
—, —, Wells, E. B., Koomen, J., Jr. & Berry, G. P., 451.
—, Wells, E. B., Koomen, J., Jr., Dascomb, H. E. & Berry, G. P., 782.
Szabo, L. See Dalgaard-Mikkelsen, S. et al., 2853.
Szafarski, J., 3645.
Szanto, P. B. See Koch-Weser, D. et al., 2370.
—. See also Waldstein, S. S., 1111.
Szczygielska, J. See Fleck, L., 3622.
Szumowski, P. & Langlois, B., 3740.

T

Tabela, R. J., 2984.
Tabuchi, E., Hosoda, T., Akiyama, Y. & Narita, R., 2580.
—, Narita, R. & Ebi, Y., 2584.
Tacquet, A. See Gernez-Rieux, C., 304.
Tagle, I. See Schoijet, A. et al., 3569.
Takayama, Y. See Kobayashi, R. et al., 1009.
Tal, C. & Goebel, W. F., 1938.
Talbot, L. J. See LeVeen, H. H. et al., 848.
Talice, R. V., 703.
Tallman, K L. See Merilan, C. P. et al., 3136.
Talsma, D., 2962
—. See also Oostenbrug, W., 2833.
Tamer, Y., 3227.
Tamm, I. See Freymann, M. W. et al., 2275.
Tanabe, T. Y. & Casida, L. E., 2749.
Tang, C. C., 2933.
Tannenbaum, A., page 654.
—. See also Silverstone, H., 458.
Tapernoux, A. See Darraspen, E. et al., 1793.
Tashiro, T. See Fujita, A. et al., 2382.
Tashman, S. See Klein, M. et al., 2120.
Tassi, L. & Ignesti, E., 3064.
Tatting, B. See Cartwright, G. E. et al., 3501.
Tatum, E. L. See Barratt, R. W., 887.
Taubenhaus, M. & Amromin, G. D., 1177.
Tavoni, V., 2485.
— & Faccincani, F., 2849.
Taylor, A. W., 2234, 3465.
— & McDiarmid, A., 1282.
Taylor, C. B., 599.
—, Baldwin, D. & Hass, G. M., 1467.
Taylor, E. M. & Moloney, P. J., 3100.
Taylor, E. S., Pallas, W. C., Wikle, W. T., McCallin, P. F. & Goodman, S. N., 135.
Taylor, J. I. See Edwards, S. J. et al., 2475, 2477.
—. See also Holman, H. H. et al., 634.
—. See also Pattison, I. H. et al., 633.
Taylor, L. W. See Lerner, I. M. et al., 1621.
Taylor, S. G., Ayer, J. P. & Morris, R. S., 1429.
Tazewell, E. R. & Greenough, P. R., 252.
Teague, H. S. & Carpenter, L. E., 2329.
Teeter, K. G. See Bartlett, D. E. et al., 59.
Teilum, G., Engbaek, H. C. & Simonsen, M., 3020.
Temperton, H., Dudley, F. J. & Parker, W. H., 347.
Tenbroeck, C., 2270.
— & Herriott, R. M., 2271.
Tennant, R., Adelson, L., McAdams, G. & Davie, R., 516.
Tentori, L. See Bettini, S., 1037.
Terrill, S. W. See Wahlstrom, R. C. et al., 2320.
Tervoert, F. W., Stuart, K. C. & Stroes, J., 884.
Terzian, L. A., 2049.
Tesluk, H. See Yuile, C. L. et al., 2080.
Testi, B., 3570.
Tetley, J. H., 1418.
Teuchner, K., 1254.
Teunissen, G. H. B., 1584, 3705.
—. See also van der Kaay, F. C. et al., 2331.
Teuscher, 265.
Tew, R. P., David, W. A. L. & Busvine, J. R., 2687.
—. See also Busvine, J. R., 427.
Thannhauser, S. J., page 339, 2789.
Thaysen, A. C., 3357
Theiler, G. See du Toit, R. et al., 2608.
Thelen, H. M. See Lennette, E. H. et al., 2293.
Theobald, G. W., 1822.
Thienpont, D., 339.
Thiersch, J. B. See Johnson, B. C. et al., 3302.
—. See also Neumann, A L. et al., 2972.
Thiery, G., 890.
—. See also Drieux, H., 2048.
—. See also Drieux, H. et al., 1108.
Thiery, J.-P., 46, 1999.
— & Lucas, 312.
— & Richou, R., 414, 415, 1905.
—. See also Ramon, G. et al., 1352.
Thieulin, G., 3142.
—. See also Guillot, G. et al., 3364.
Ten Thije, J. H. See Jansen, J. et al., 1783.
Thimann K. V. See Pincus, G., 2219.
Thin, C. See Robertson, A. et al., 1446.
Thjotta, T., Rasch, S. & Urdal, K., 2862.
Thomas, A., Salomon, L. & Salomon, L., 2568.
Thomas, A. D. See Neitz, W. O., 355.
Thomas, A. E. See Duncan, P. R. et al., 2918.
Thomas, B. & Walker, H. F., 1451.
Thomas, J. E. See Friedman, M. H. F., 1844.
Thomas, J. W., 2714.
Thomas, L., Paterson, P. Y. & Smithwick, B., 1685.
Thomas, L. E. & Mayer, D. T., 566.
Thomas, P. E. L., 1576.
Thompson, A. P. D. See Symmers, W. St. C., 452.
Thompson, C. F. See Kessel, J. F., 694.
Thompson, D. S., 470.
Thompson, H. J. McCroskey, R. M. & Brody, S., 540.
—. See also Ragsdale, A. C. et al., 2387.
Thompson, J. J. See Jamieson, S. et al., 47
Thompson, R. See Carter, C. W., 627.
Thompson, S. Y. See Davis, V. E. et al., 806.
Thomson, E. F. See Rountree, P. M. et al., 3132.
Thomson, W. See Carpenter, K. J. et al., 1123.
Thomson, W. M., 37.
Thorn, G. W. See Merrill, J. P. et al., 562.
Thorne, C. B. See Housewright, R. D., 1252.
Thornton, D. M. See Cuthbertson, W. F. J. et al., 478.
Thornton, H., 3410.
Thorold, P. W., 61, 328.
Thorp, F., Jr. See Gray, M. L. et al., 2837.
—. See also Loomis, L. N. et al., 1020.
—. See also Luecke, R. W. et al., 1080.
—. See also Webster, H. D. et al., 2090.
Threefoot, S. A. See Burch, G. E. et al., 1559.
Thurston, J. P., 351.
Tidy, H. & Short, A. R., page 654.
Tiffany, E. J. See Schubert, J. H. et al., 3607.
Tilgner, K., 3140.
—. See also Seelemann, M., 2480.
Tillisch, J. H. See Beeler, J. W. et al., 2374.
Tillmanns, S., 2674.
Tillson, E. K. See Scheidy, S. F. et al., 197.
Timiras, P. S. & Selye, H., 538.
—. See also Selye, H., 212.
Timm, W. See Borchert, A., 118.
Timoney, J. F., 1463.
Tinaz, A. & Kurtpinar, H., 2947.
Ting, H. C. See Feng, L. C. et al., 2626.
Tinne, J. E. & Henderson, J. L., 1923.
Tison, F., 2822.
Tissier. See Boyer, J., 654.
Titchen, D. A. See Comline, R. S. et al., 3350.
Tobback, L., 1988, page 482.
Tobin, C. E., 802.
Tobin, J. O'H. See Duncan, P. R. et al., 2918.
Toca, R. L. See Spies, T. D. et al., 839.
Todd, A. C., Arbogast, F. M., Wyant, Z. N., Stone, W. M. & Elam, G. W., 2943.
—, Hansen, M. F., Kelley, G. W. & Wyant, Z. N., 441.
—, —, Wyant, Z. N., Crowdus, D. H. & Cawein, M. J., 2309.

—, —, —, Kelley, G. W. & Crowdus, D. H., 438, 439.
—, Kelley, G. W., Wyant, Z. N., Hansen, M. F. & Hull, F. E., 437.
—. See also Hansen, M. F. et al., 1163. 2138.
Todd, F. A., 2743.
Tötterman, G., 852.
Tohara, S., 2144.
du Toit, R. & Goosen, P. J., 424.
—, Graf, H. & Theiler, G., 2608.
— & Kluge, E. B., 2927.
Tolot, F. See Dhers, V. et al., 1477.
Tomašić, P. See Muić, N. et al., 1488.
Tomhave, A. E. See Seeger, K. C. et al., 348.
Tompsett, R., McDermott, W. & Kidd, J. G., 413.
—. See also Knight, D., 1264.
Topley, E., Lowbury, E. J. L. & Hurst, L., 1812.
—. See also Jackson, D. M. et al., 3478.
Torrealba, J. F., 1305, 1307.
Torres, G. S., 71.
Torrico, R. A. M., 1985.
Tosic, J. & Walton, A., 1534.
—. See also Mitchell, R. L., 220.
Totter, J. R. See Sadun, E. H. et al., 448.
Toucas L. See Martin, L. A. et al., 3233.
Touratier, L. See Androdias, A. et al., 823.
Town, B. W., Wills, E. D. & Wormall, A., 835.
Townsend, J. G., 236.
Toyama, Y. See Kobayashi, R. et al., 1009.
Tracey, M. V., 2728.
Trager, W., 1669.
Traub, E. & Möhlmann, H., 2564.
Traub. R., Frick, L P. & Diercks, F. H., 408.
Traum, J., 43.
Trautmann, A. & Hill, H., 2394.
—. See also Scheunert, A., page 654.
Trawinski, A., 3474.
Treflinger, J., 711.
Trenchi, H., 3246 .
Trentin, J. J. & Turner, C. W., 2428.
Trim, A. R., 838.
Trincão, C., 58.
Trinquier, E. See Ceccaldi, J. et al., 1308.
—. See also Pellisier, A., 744.
Troquereau, P. See Pellissier, A., 744.
Trow-Smith, R., 3125.
Trussell, P. C. & Stevenson, W. G., 2482.
Tsaprun, A. A. See Abramov, I. V. et al., 3532.
Tsubahara, H. See Yamamoto, S. et al., 2583.
Tsuboi, K. K., Stowell, R. E. & Lee, C. S., 2359.
Tuba, J. & Hoare, R., 3038.
Tubahara, H. & Harada, K., 2577.
Tubiana, M., 3119.
Tucker, A. L. See Gerhardt, P. et al., 1286.
Tüdzil, A. N., 2562.
Tukey, J. W., DuFour, E. H. & Seibert, F., 302.
Tullis, G., 570.
Tullner, W. W. See Hertz, R. et al., 2379.
Tunçman, Z. M., 3214, 3218
Turbet, C. R., 250, 1775.
Turk, R. D., 125.
—. See also Monlux, W. S., 3267.
Turnbull, P., 7.
Turner, C. W. See Kumaran, J. D. S., 2719.
—. See also Trentin, J. J., 2428.
Turner, N., page 339, 2805.
Turner, S. G. See Stephan, S. A. R. et al., 1746.
Turner, T. B. & Hollander, D. H., 1148.
Turner, V. See Koren, J., 1460.
Turpin, R., page 482, 2795.
—, Schmitt-Jubeau, H. & Jerome, H., 1774.
Turunova, L. E., 1420
Tutt, J. F. D. See Hayes, M. H., 1246.
Tweedy, W. R. See LeRoy, H. V. et al., 3022.
Twerski, J. See Sulman, F. G., 205.
Twomey, D. See Barry, V. C. et al., 17.
Tybjaerghansen, A. See Eskildsen, P. et al., 1168.
Tzschacher, W., 1495.

U

Udall, D. H., 2352.
Udall, R. H. See McCay, C. M., 2620.
Ueda, A. See Yamafuji, K., 1712.
Üstün, T. F., 2249.
Ugorski, L., 1276.
Ulberg, L. C. See Cheng, P. et al., 224.
Ullrich, K., 377.
Ullyett, C. G, 3626.
Ulrich, H. See Krupski, A. et al., 2079.
Ulrich, J. A. & Fitzpatrick, T. B., 2859.
Underdahl, N. R. See Young, G. A., Jr., 1397, 3548.
—. See also Young, G. A., Jr. et al., 368.
Underwood, E. J., Conochie, J., Reed, F. M. & Smyth, R., 2078.
— & Shier, F. L., 3308.
—. See also Curnow, D. H. et al., 2649.
Underwood, P. C. See Bartlett, D. E. et al., 59.
Ungar, G. & Damgaard, E., 2393.
Upton, E. See Hanson, R. P. et al., 1699.
—. See also Winslow, N. S. et al., 734.
Urdal, K. See Thjøtta, T. et al., 2862.
Ure, D. A., 1564.
Ureen, H. J. See Lippman, R. W. et al., 3725.
Ustvedt, H. J., 644.
Uzzell, E. M., Becker, R. B. & Jones, E. R., 560.

V

Vahlquist, B. See Gullberg, S., 474.
Vaicenbacher, V. See Křeček, J. et al., 1982.
Vaisman, A. See Levaditi, C. et al., 308. 1344, 3150, 3187.
Vaitsman, J. & Abdala, O., 3229.
Valade & Salle, 820.
Valerani, L., 1859.
Vallée, A. & Charbonner, R., 3.
—. See also Jacotot, H. et al., 735.
Vallée, H., 1024.
VanDemark, N. L. & Salisbury, G. W., 1861.
—. See also Kendall, K. A. et al., 1432.
—. See also Salisbury, G. W., 3077.
Vandeplassche, M., 1447.
Vanderlinde, R. E. & Westerfield, W. W., 1757.
Vanderlinde, R. J. See Yegian, D., 928.
Vanderplank, F. L., 3628.
Vang, V. F. L., 3452.
Vanni, V., Infantozzi, C. M. & Prego, C., 1042.
Vardaman, T. H. See Larsen, A. B. et al., 1609.
Vardar, A. E., 2512.
— & Esin, I., 2514.
Varney, P. L. See McDowell, F., 938.
Vartia, K. O., 2378.
Vartiainen, I. & Bastman-Heiskanen, L., 2936.
Vasey. A. J. See Bull, L. B. et al., 3401.
Vashkov, V. I., 1475.
— & Serebryakova, E. K., 1799.
Vaughan, A. C. T. See Marks, J., 2222.
Vaughan, A. W., 2198.
Vaughan, D. D. See Derbes, V. J. et al., 2229.
Veenendaal, H., 3680.
Veiga, J. S. See Chieffi, A. et al., 3754.
Velbinger, H. H. See Künzer, P. K., 2619.
Veldee, M. V. See deMontesquiou, M. et al., 1561.
Velu, 1492.
Velu, H. See Robin, V. et al., 831.
Venge, O., 3379.
Venkataramanan, K. & Krishnaswamy, N., 2105.
Venn, J. A. J. See Blakemore, F., 1433.
Venturi, P., 3230.
Venzke, W. G., 2513.
Vere-Jones, N. W., 3101.
Vergani, F. See Ramirez Villamediana, J. J., 2058.
Verge, J., 2506.
—, Raoul-Duval, P. & Dabrigeon, J., 638.
—. See also Perrin, G. et al., 30.
Verges, P. See Meyer, E., 3181.
Vergragt, J. H. See van Vloten, J. M., 3438.
Verhaart, W. J. C. See Collier, W. A. et al., 2031.
Verhagen, B. A., 1883.
Verlinde, J. D., 84.
— & Spaander, J., 1007.
Vermeil, C. See Callot, J. et al., 746.
Verschoote, G. See Gernez-Rieux, C. et al., 3463.
Verschure, J. C. M., 2192.
Vervack. See de Vuyst, 585.
Vialat, C. See Béquignon, R. et al., 1345.
Vianello, G., 2663.
Vickery, J. R. See Alford, L. R. et al., 3367.
—. See also Gillespie, J. M. et al., 3062, 3063.
Videbaek, A., 1063.
Vietze. See Roots, 2868.
Vilain, 1304.
Viljčinskii, A. D., 1860.
Villares, J. B. & da Rocha, G. L., 3732.
Villegas, P. See Ruiz Sanchez, F. et al., 918.
Vincke, I. H. See van den Berghe, L. et al., 1330.
Vindekilde, T. See Jepsen, A., 3490.
Vink, H. H. See Clarenburg, A., 1624.
—. See also Clarenburg, A. et al., 1627.
Vinson, J. W. & Walsh, F. T., 371.
Vinter, F. J., 2177.
Virgili, R. & Marchiafava, G., 1474.
Visintini, A., 3183
Vittoz, A. See Bariéty, M. et al., 1922.
Vittoz, R., 1678, 2281.
Vladimirov, V. V., 380.
van Vloten, J. M. & Vergragt, J. H., 3438.
Völker, R. & Krause, D., 821.
Vogel, F. S., 3557.
Vogelsang, E. G. & de Armas, J., 2544.
— & Espín, J., 1300.
— & Gallo, P., 1400.
— & Llamozas, G. P., 423.
— & Potenza, L., 2945.
Vogler, G., 1530.
Vogt, M., 1175.
Volini, I. F. See Felsenfeld, O. et al., 1491.
Voorhees, C. D. See Roofe, P. G. et al., 614.
Voronov, D. L., 976.
Vors, J., 3377.
Vorwald, A. J., Dworski, M., Pratt, P. C. & Delahant, A. B., 1607.
De Vos, N., 1399.
Voureka, A., 1813.
Vranchan, Z. E. See Polyakov, A. A., 2176.
de Vries, A., Herz, N. & Heiman-Hollander, E., 3344.
de Vries, J. A., 410.
Vrijburg, B., 2978.
Vuillaume, R. See Darraspen, E. et al., 1793.
de Vuyst & Vervack, 585

W

Wabnitz, C. H., 3691.
Wada, M. See Aoki, T., 3708.
Wade, G. R. See Blanchard, M. C. et al., 738.
De Wael, J. See Beijers, J. A. et al., 2670.
Wagley, P. F. See Carey, R. A. et al., 1142.
Wagner, H., 2747.
Wagner, R. R., 3551.
— & Bennett, I. L., Jr., 2006.
Wagner, W., 381.
Wagner-Jauregg, T., page 339.
Wahlstrom, R. C., Terrill, S. W. & Johnson, B. C., 2320.
Waksman, S. A., 233, 518, 619.
—, Katz, E. & Lechevaler, H., 833.

Waldmann, O., 3539.
Waldron, D. H. See Donaldson, E., 2892.
Waldstein, S. S. & Szanto, P. B., 1111.
Waletzky, E., Clark, J. H. & Marsen, H. W., 2880.
Walker, A. R. P., 211.
Walker, D. J., 1622, 2673.
Walker, H. F. See Thomas, B., 1451.
Walker, J., 1962.
—. See also Fildes, P. et al., 2681.
Walker, R. V. L. See Gwatkin, R. et al., 3684.
Walker, T. K. See Kulka, D. et al., 2446.
Wallace, A. C. See Paterson, J. C. et al., 1105.
Wallace, C. N. See Sweet, J. D. et al., 3702.
Wallace, E. See Doll, E. R. et al., 1702.
Wallace, H. D. See Loosli, J. K., 3013.
Wallace, L. R., 2982.
Wallace, M. E. See Doll, E. R., 2683.
—. See also Doll, E. R. et al., 388, 729, 1133, 2289.
Walis, L. P. See Goodwin, L. G., 1987.
Walsh, F. T. See Vinson, J. W., 371.
Walter, C. W. See Merrill, J. P. et al., 562.
Walthard, B., 2152
Walton, A. See Tosic, J., 1534.
Warburg, O., page 339.
— & Lawson, A., 3711.
Ward, A. H., 914.
Ware, G. C. See Bigger, J. W., 523.
Warner, R. G. & Sutton, T. S., 3292.
Warrack, G. H. See Oakley, C. L. et al., 3257.
Warren, J., Russ, S. B. & Jeffries, H., 75.
—, Smadel, J. E. & Russ, S. B., 79.
—, Weil, M. L., Russ, S. B. & Jeffries, H., 1025.
Warren, J. R. & Graham, F., 1661.
Warth, P. T., Chandler, C. A. & Bliss, E. A., 520.
—. See also Bliss, E. A. et al., 1493.
Warwick, E. J. See Colby, R. W. et al., 1768.
Waterhouse, D. F., 109, 2051.
— & Paramonov, S. J., 2300.
— & Scott, M. T., 3261.
Waterhouse, J. A. H. See Whitfield, A. G. W. et al., 2122.
Waters, L. L. & deSuto-Nagy, G. I., 817.
—. See also McAllister, W. B., Jr., 497.
Waters, N. F., Groschke, A. C. & Scott, H. M., 793.
Watkins, E. D., 2869.
Watson, H. G., 3563.
Watson, J. D., 3251.
Watson, J. H. L. See Angulo, J. J. et al., 1359.
Watt, J. A. See Stamp, J. T. et al., 743, 813.
Watts, N. P. & Boyd, F. A., 1046.
— & McConnell, K. P., 2307
Watts, P. S., 2345, 2811.
— & Robertson, J., 637.
Watts, R. E., Boley, L. E. & Greig, W. A., 963.
Watts, W. E. & Mathieson, D. R., 1808.
Watzka, A., 1150.
Waugh, M. H. See Gillespie, H. B. et al., 405.
Waugh, T. R. & Waugh, T. R., Jr., 892.
Waugh, T. R., Jr. See Waugh, T. R., 892.
van Waveren, G. M., 2782.
Waworoentoe, F. K. & Mansjoer, M., 1736.
Wayne, H. See Green, H. D. et al., 1218.
Weaver, N. K. See Derbes, V. J. et al., 2229.
Weber, D. See Rozansky, R. et al., 943.
Webster, H. D., Huffman, C. F., Gray, M. L. & Thorp, F., Jr., 3090.
Webster, W., 57.
Wedd, G. D., 3108.
Weddell, G. See Zander, E., 2143.
Wedum, A. G., 1877.
Wegener, F., 1977.
Weidenmüller, H., 951.
Weidmann, H., 517.
Wei, M. L. See Warren, J. et al., 1025.
Weiland, 1208.
Weiland, P., 1209.
Weinberger, H. J. See Dienes, L. et al., 1280.
Wiener, M. See Epps, W. et al., 1060.
Weinmann, J. P. See Banks, S. O. et al., 2967.
Weis, J., 1466.
Weisberger, A. S. & Heinle, R. W., 2367.
—, —, Storaasli, J. P. & Hannah, R., 219.
Weiss, E., 2023.
—. See also Gogolak, F. M., 2024.
Weiss, H. See Schmidt, K. et al., 2411.
Welch, H., 2672.
Weller, T. H. See Pappenheimer, A. M. et al., 1688.
Wellmann, G., 3472, 3473.
Wells, A. J. See Homan, H. H., 2071.
Wells, B. B., 280.
Wells, E. B. See Syverton, J. T. et al., 451, 781, 782.
Wells, R. W. See Bushland, R. C. et al., 2408.
—. See also Claborn, H. V. et al., 3057, 3336.
Welz, G. See Krause, D., 2989.
Wender, L., 290.
Wentzel, L. M., Sterne, M. & Polson, A., 1955.
Werner, C. A. & Knight, V., 1636.
Werner, H. O. See Reagan, R. L. et al., 1018.
Werner, J. J., 2065.
Werner, W. & Zöckler, H., 1941.
Wery, J. E., 2878
West, C. D. & Rapoport, S., 1158.
Westerfield, W. W. See Vanderlinde, R. E., 1757.
Westermarck, H., 2052, 2106.
Westhues, M. See Moser, E., page 59, 2794.
van der Westhuizen, G. C. A., Oxford, A. E. & Quin, J. I., 1431.
Westman, A. See Diczfalusy, E., 2168.
—. See aso Diczfalusy, E. et al., 1538.
Westphal, A., 500.
— & Finke, L., 1332.
Westwood, J. C. N. See Smith, W., 3223.
Wetmore, P. W. See Gochenour, W. S., Jr. et al., 984.
—. See also Yager, R. H. et al., 2088.
Wetzel, R., 2628, 2629.
—. See also Glässer, K. et al., 3433.
Weyer, F., 1405.
—. See also Nauck, E. G., 1382.
Wharton, D. R. A. Miller, G. L., Wharton, M. L., Hankwitz, R. F., Jr. & Miller, E. E., 3656.
Wharton, M. L. See Wharton, D. R. A. et al., 3656.
Whatmough, W. A., 3777, page 654.
Wheeler, R. S. & Hoffmann, E., 797, 1140.
—, — & Barber, C. W., 1327.
Wherrett, A. B. See Dumaresq, J. A., 1762.
Whipple, G. H. See Stewart, W. B. et al., 2081.
White, A. G. & Sachs, B. A., 167.
White, C. L. See Bryan, W. R. et al., 3288.
White, E. G., 2200.
White, E. P., Sewell, O. K. & Bassett, E. G., 825.
White, I. G., 3043.
White, J. C. See Armstrong, J. B., 1786.
White, J. E. See Lichstein, H. C., 995.
White, R. G. See Marshall, A. H. E., 409.
White, R. W., 259.
Whiteford, H. A. See Begg, H., 2375.
Whitehair, C. K., Schaefer, A. E. & Elvehjem, C. A., 156.
—. See also Bell, M. C. et al., 2960.
—. See also Davis, V. E. et al., 806.
Whitehead, E. I. See Stahler, L. M., 1472.
Whitehead, J. K. See Bentley, H. R. et al., 502, 3699.
Whitehill, A. R., Oleson, J. J. & Hutchings, B. L., 519.
Whitfield, A. G. W., Arnott, W. M. & Waterhouse, J. A. H., 2122.
Whiting, F. See Krukovsky, V. N. et al., 1833.
Whitley, J. R. See Hogan, A. G et al., 794.
—. See also O'Dell, B. L. et al., 2973.
Whitlock, H. V., 260, 1878.
Whitney, D. M. See Anigstein, L. et al., 521.
Whitney, L. F., 243.
Whittem, J. H. See Keep, J. M. et al., 1694.
—. See also Steel, J. D., 1013.
Whitten, W. K., 2424.
Whittleston, W. G., 2136.
Wickham, N. & Carne, H. R., 1671.
Widdowson, E. M., 3030.
—. See also McCance, R. A., 2385, 3715.
Widdowson, R. W. See Hill, R. et al., 885.
Wiedman G. P. & Paley, S. S., 1279.
Wielenga-Bergman, A. B. See Wolf, J. W. et al., 3510.
Wiertz, G., 2697.
Wiese, A. C., Lehrer, W. P., Jr., Moore, P. R., Pahnish, O. F. & Hartwell, W. V., 3300.
—. See also Johnson, B. C. et al., 1442.
—. See also Lehrer, W. P., Jr. et al., 3677.
Wiesner, B. P. & Yudkin, J., 3748.
Wigaud, R. & Peters, D., 3514.
Wiggall, R. H. See DeLamater, E. D. et al., 1649.
Wiggins, E. L., Casida, L. E. & Grummer, R. H., 1545.
—, Grummer, R. H. & Casida, L. E., 3081.
Wildik, R. W., 2261.
Wikle, W. T. See Taylor, E. S. et al., 135.
Wilby, F. See Davis, V. E. et al., 806.
Wild, H. See Collins, W. F., 2999.
Wild, J. J. & Neal, D., 2357.
Wilde, J. K. H. See Beakbane, H. R., 2617.
Wiley, M. See Davis, J. B. et al., 3498.
Wiley, T. E. See Marion, G. B. et al., 3078.
Wilkins, J. H., 3067.
Wilkinson, A. W., Billing, B. H., Nagy, G. & Stewart, C. P., 2137.
Willems, G. B. R. See van Oijen, C. F., 2478.
Willems, R., 38, 361.
Willers, E. H. See Adler, H. E. et al., 2030.
Willett, E. L., 873.
— & Buckner, P. J., 2414.
Williams, A. I. See Boyd, G. A. et al., 610.
Williams, H. H. See Louw, J. G. et al., 1501.
Williams, L. F. See Plastridge, W. N. et al., 258.
Wliams, P. G. See Nungester, W. J., 903, page 59.
Williams, R. E., 204.
Williams, R. H., page 192, 3780.
Williams, R. J., Eakin, R. E., Beerstecher, E., Jr. & Shive, W., page 272, 3436.
Williams, R. O., 3419.
Williams, V. J. See Moir, R. J., 2396.
Williams, W. L., 2360.
Williamson, A. P. See Blattner, R. J., 2364.
Williamson, J. See Rollo, I. M., 1989.
Williamson, R. L. See Splitter, E. J., 1996.
Willis, R. A., 3387.
Willmott, S., 1735.
Wills, E. D. See Town, B. W. et al., 835.
Wilson, A. T. See Ginsberg, H. S., 1023.
Wilson, C. D. & Slavin, G., 1872.
Wilson, D. R., Anderson, R. D. & Smith, W., 2283.
Wilson, J. B. See Gerhardt, P. et al., 1286, 1658.
—. See also Gochnauer, T. A., 2223.
—. See also Levine, H. B., 1638.
—. See also Marr, A. G., 2246.
Wilson, J. E., 788, 955, 3528.
—. See also Soulsby, E. J. L. et al., 227.
Wilson, J. G., 1313.
— & Barch, S., 1771.
Wilson, J. W., 2445.
Wilson, K., page 654.
Wilson, R. H., 2390.
— & DeEds, F., 1789.

Wilson, S. G., 2255, 2768.
Wilson, W. O., 3756.
— & Edwards, W. H., 1549.
Wilson, W. R. & McDiarmid, A., 1951.
Windle, W. F. See Lillie, R. D. et al., 615.
Winkenwerder, W. L. See Carey, R. A. et al., 1143.
Van Winkle, Q. See Hoster, M. S. et al., 1752.
Winkler, A. See König, H., 2539.
Winks, W. R., Sutherland, A. K. & Salisbury, R. M., 2995.
Winmill, A. J. See Paterson, A. B., 1873.
Winslow, N. S., Hanson, R. P., Upton, E. & Brandly, C. A., 734.
—. See also Hanson, R. P. et al., 1699.
Winter, A. R., Greco, P. A. & Stewart, G. F., 1524.
Winton, B., 2786, 3427, 3773.
Wintrobe, M. M. See Cartwright, G. E., 2968.
—. See also Cartwright, G. E. et al., 488, 3301.
Wiprächiger, page 192.
Wirth, D., 678, 2064.
— & Diernhofer, K., page 60, 3116.
Wise, G. H. See Parrish, D. B. et al., 1834.
Wisnicky, W. See Casida,, L. E., 245.
Wiśniewski, T., 3559.
Wiśniowski, J., 3215.
Wodzicki, K. A., page 339.
Wohlfrom, E., page 60.
Wohlzogen, F. X., 1152.
Wolf, A. See Cowen, D., 1995.
—. See also Lumsden, C. E. et al., 1686.
Wolf, A. V., page 339.
Wolf, F. A. See Wolf, F. T., 2409.
Wolf, F. T. & Wolf, F. A., 2409.
Wolf, G. See Kühl, R. et al., 2609.
Wolf, J. W., Loman, S. & Wielenga-Bergman, A. B., 3510.
Wolfe, C. K. See Caldwell, E. R., Jr., et al., 3016.
Wolff, A. H. & Heimann, H., 2227.
Wolff, H. L. & Dinger, J. E., 2848.
Wolff, H. S., 893.
Wolff, J. W., van Dam, R & Minkenhof, J. E., 3511.
Wolffe, E., 222, 882.
Wolfson, W. Q., Cohn, C. & Shore, C., 1846.
Wolgamot, J. R. See Duncan, G. G. et al., 2119.
Wolman, I. J. See Lecks, H., 549.
Wolman, M., 714.
Womack, C. R., Kass, E. H. & Finland, M., 2377.
Wong, E. See Rossiter, R. J., 1505.
Wong, S. C. & Cox, H. R., 2259
Wongongsarn, C. See Hudson, J. R., 2016.
Wood, J. N. See Sinclair, A. N. et al., 3393.
Wood, M. T. See Bryan, W. R. et al., 3288.
Wood, R. M., 1945.
—. See also Bryer, M. S. et al., 965.
—. See also Woods, A. C., 1147.
Woodburn, M. A. See Hunter, M. E. et al., 909.
Woodring, F. R. See Olson, C., Jr. et al., 92.
Woodroofe, G. M., 3469.
Woodrow, C. E., 382.
Woodruff, M. F. A. & Forman, B., 1391.
Woods, A. C. & Wood, R. M., 1147.
Woods, A. C., Jr., Proctor, D. F., Isaacs, J. P. & Carter, B. N., 3721.
Woods, D. D. See Fildes, P. et al., 2681.
Woods, G. T., Shideler, R. K., Myers, H. F. & Rhoades, H. E., 1779.
Woodward, R. R. & Knapp, B., Jr., 1750.
Woolf, B., 1554.
Woolley, D. W., 2343.
Work, T. S. See Fildes, P. et al., 2681.
Wormald, P. J. See Boissard, J. M., 6.
Wormall, A. See Town, B. W. et al., 835.
Worsley, R. R. le G., 2175.
Worstell, D. M. See Brody, S. et al., 2695.
—. See also Ragsdale, A. C. et al., 2387.
Woyciechowska, S., 3224.
Wrete, M., 611.
Wright, E. A., Morgan, R. S. & Wright, G. P., 2247.
Wright, G. G. & Slein, J. B., 3448.
—. See also Alexander, M. M. et al., 969.
Wright, G. M. See Hayes, A. F., 1646.
Wright, G. P. See Wright, E. A. et al., 2247.
Wright, J. G. See Benesch, F., page 191.
Wright, L. T. & Lowen, H. J., 1964.
Wright, M. L., 31.
— & Edwards, P. R., 952.
Wright, R. A. See Aun, L. K. et al., 2844.
Wright, W. H., 3269.
Wuerthele-Caspé, V. Alexander-Jackson, E., Anderson, J. A., Hillier, J., Allen, R. M. & Smith, L. W., 1428.
Wulff, V. J. See Bishop, D. W. et al., 3120.
Wyant, Z. N. See Todd, A. C. et al., 437, 438, 439, 441, 2309, 2943.
Wyckoff, R. W. G. See Labow, L. W. et al., 1713.
—. See also Morgan, C., 713.
Wyke, B. D. See McGovern, V. J. et al., 2277.
Wynn-Williams, G. See Bishop, P. M. F. et al., 529.

X

Xalabarder, C., 489.

Y

Yager, R. H., Gochenour, W. S. & Wetmore, P. W., 2088.
—. See also Gochenour, W. S., Jr. et al., 984.
—. See also Olitsky, P. K., 80.
Yakushev, V. I., 2014.
Yamafuji, K., Akita, T. & Inaoka, M., 3256.
—, Fujii, S. & Akita, T., 3255.
— & Ueda, A., 1712.
Yamamoto, S., Tsubahara, H., Yoshida, T. & Harada, K., 2583.
—. See also Sugawa, Y. et al., 2576, 2581.
Yamazaki, K. See Fujita, A. et al., 2382.
Yang, S. H. See Findlay, J. D., 3338.
Yee, G. S. See Shoshkes, M. et al. 3295.
Yegian, D. & Vanderlinde, R. J., 928.
Yen, C. K. See Dubin, I. N., 3531.
Yildiran, C., 1540.
Yntema, C. L. See Bass, A. D. et al., 3331.
Yofe, J. See Leeson, H. S. et al., page 192.
Yoshida, T. See Kawashima, H., 2578.
—. See also Yamamoto, S. et al., 2583.
Youmans, A. S. & Youmans, G. P., 1925, 3461.
—. See also Youmans, G. P., 1926.
Youmans, G. P. & Youmans, A. S., 1926.
—. See also Youmans, A. S., 1925, 3461.
Young, E. H. P. See Hoggarth, E. et al., 930.
Yung, G. A., Jr. & Underdahl, N. R., 1397, 3548.
—, — & Carpenter, L. E., 368.
Young, G. B., 2433.
Young, H. E., 1183.
Young, H. N. See Plough, H. H. et al., 1630.
Young, J. S. & Griffith, H. D., 3655.
Young, J. Z., page 339, 2797.
Young, L. See Simpson, S. D., 1798.
Young, R. B. See Moule, G. R., 2966.
Young, V. A., 579.
Young, V. M. See Felsenfeld, O. et al., 1491, 1948.
Younghusband, O. Z. See McLean, C. R. et al., 3696.
Youngken, H. W. See Pratt, R., page 598.
Yu, P. N. G. See Filer, L. J. et al., 2648.
Yuan, I.-C. See Ho, E. A. et al., 3197.
Yudkin, J. See Wiesner, B. P., 3748.
Yuile, C. L., Hayden, J. W., Bush, J. A., Tesluk, H. & Stewart, W. B., 2080.
—. See also Stewart, W. B. et al., 2081.
Yutuc, L. M. & Sher, H., 690.

Z

Zacharias, L., Goldhaber, P. & Kinsey, V. E., 1077.
—. See also Goldhaber, P. et al., 1078.
Zacherl, M. K. & Kapoun, R., 856.
Zahran, G. See Daubney, R. et al., 1368.
Zálešák, M., 2817.
Zamecnik, P. C., 1753.
Zamuri, I. R., 42.
Zander, E. & Weddell, G., 2143.
Zarafonetis, C. J. D. & Oster, H. L., 1719.
Zargar, S. L., 162.
— & Pomeroy, B. S., 1019.
Zavagli, V., 375.
Zbořil, J., 651.
Zehender, E. See Liebermeister, K., 1711.
Zernike, F. See Saylor, C. P. et al., 2447.
Zettler, 1465.
Zietzschmann, O. & Nickel, R., 629, 2798.
Van Zijl, W. J., 2388.
Zilversmit, D. B., Stern, T. N. & Overman, R. R., 3050.
Zimmerman, L. E., 3180.
Zimmerman, P., 761.
Zinober, M. R. See Dale, C. N. et al., 3568.
Zinsser, A. D. See Zinsser, H. H. et al., 3084.
Zinsser, H. H., Zinsser, A. D. & Storey, C. M., 3084.
Zirkel, C. See Lillie, R. D. et al., 615.
Zöckler, H. See Werner, W., 1941.
Zotov, A. P., 1690.
Zottner, Chevrier & Camou, 3632.
Zuckerman, S., Palmer, A. & Hanson, D. A., 206.
Zuelzer, W. W. See Kaplan, E., 3716.
Zumpt, F., 2614.
Zuydam, D. M., 1695, 1696, 2914, 3238.
Zwart, S. G., 3065.
Zweifach, B. W. & Shorr, E., 3779.
Zwol, H. S., 1351.

SUBJECT INDEX

The index is constructed fundamentally from the titles of articles, which may not indicate all the points of interest in the abstract or original. Readers should therefore always search the main headings and the " general " sub-headings for points of special interest:—*e.g.* for references to the control of bovine brucellosis, see " Brucella Infection, general " and " Brucella Infection, in cattle " in addition to " Brucella Infection, control ". General headings should also be searched for particular parasites. For drug treatment, see under name of condition treated.

[The numbers refer to abstracts and not to pages]

A

ABATTOIRS. Electrical stunning, **884**; in the Argentine, **1556**; prevention of anthrax in Turkey by control of abattoirs, **2226**; a basic project, **3765**.
See also Cysticercus Food Hygiene, meat inspection; Reports, Union of South Africa; Slaughter.
ABNORMALITIES. See Teratology.
ABOMASUM. See Digestive System, abomasum.
ABORTION. Various causes of abortion in cattle, **163**.
See also Aspergillus; Brucella Infection; Insemination, Artificial, in cattle; Rickettsia Infection, in sheep; Salmonella Abortus Equi Infection; Hormones, oestrogens; Trichomonas Infection; Vibrio Fetus Infection; Virus Abortion, Equine; Virus Abortion, Ovine.
ABSIDIA LICHTHEIMI. Enzootic mycosis in mink caused by A. lichtheimi, **979**.
ACACIA. Mulga (Acacia aneura var. latifolia) a fodder tree in Queensland, **1858**.
ACAPRIN. See Babesia Infection (Piroplasmosis), treatment.
ACARUS. See Mange.
ACCLIMATIZATION. See Climate.
ACETAMIDE. Use of acetamide in the meiostagmin reaction, **1427**.
ACETATE. See Digestive System, rumen.
ACETIC ACID. Uptake by tissues of glucose and acetic acid from the peripheral circulation, in sheep, **2077**.
ACETONAEMIA. See Ketosis.
ACETONE BODIES. See Ketosis.
4-ACETYLAMINOBENZAL THIOSEMICARBAZONE. See Mycobacterium Tuberculosis Infection, treatment.
ACHROMOTRICHIA. See Hair.
ACOUSTICS. Effect of loud tones on response to acoustic chicks, **544**.
See also Ultrasonic Waves.
ACRIDINES. See Books, pharmacology.
A.C.S. See Theileria Infection, in cattle.
A.C.T.H. See Adrenocorticotrophic Hormone (A.C.T.H.).
ACTINOBACILLOSIS. In a mare, **55**; association of actinoides with pneumonia in cattle and relationship with Actinomyces muris-ratti, **1296**.
ACTINOMYCES BOVIS. See Actinomyces Infection.
ACTINOMYCES DERMATONOMUS. See Actinomyces Infection.
ACTINOMYCES INFECTION. In a dog, **54** and **675**; transmission of "lumpy wool" (A. dermatonomus) by benzene hexachloride dips, **328**; in turkeys, **977**; Haverhill fever in Sweden, **978**; aetiology of mammary actinomycosis, **1295**; aureomycin hydrochloride treatment, **1964**; susceptibility in vitro of human pathogenic actinomycetes to chloramphenicol, **1965**; Streptothrix infection in dogs, **1966**; a septicaemia resulting from the bite of a West African squirrel, **1968**; in Denmark, **2459**; pathogenicity to mice as an aid in identification of A. bovis, **3181**; Streptothrix, suggested cause of skin mycosis in turkeys, **3504**; Streptomyces galtieri isolated from a case of actinomycosis in a dog, **3506**; aetiology of human actinomycosis, **3507**.
See also Actinomyces Muris-Ratti Infection; Nocardia.
ACTINOMYCES MURIS-RATTI INFECTION. Haverhill fever in Sweden, **978**; association of Actinobacillus actinoides with bovine pneumonia and relationship with Actinomyces muris-ratti, **1296**; in man after rat-bite, **2531**; rat-bite fever in Norway, **2860**.
See also Actinomyces Infection.
ACUARIA. Presence of A. (Cheilospirura) hamulosa and S. differens in fowls in Turkey, **2947**.
ADENINE. Effect on rats, **1119**.
ADENOSINE TRIPHOSPHATE. See Adrenal Gland.
ADRENAL GLAND.
General. Effect of adrenal grafting on transplanted lymphatic leucaemia in rats, **463**; adrenal insufficiency after suramin treatment, **527**; effect of adrenalectomy, hypophysectomy and A.C.T.H. on phosphorus metabolism in rats, **545**; sweat and adrenal function, **861**; effect on granulation tissue, **1177**; foetal adrenals in maternal toxaemias, **1519**; action of human chorionic gonadotrophin on adrenals and testicles of hypophysectomized immature rats, **1538**; role in production of renal cardiovascular damage by anterior pituitary preparations, **2101**; function of the adrenal cortex and its relation to skin pigmentation, **2153**; ascorbic acid content of the pituitary in relation to stress and adrenalectomy, **2154**; effect of podophyllotoxin, colchicine, urethane, and nitrogen mustard on respiration of normal and adrenalectomized rat lymphatic tissue, **2155**; effect of amphenone "B", **2379**; growth of mammary gland in rats after gonadectomy and adrenalectomy, **2718**; renin sensitivity and renin substrate levels in adrenalectomized dogs, **3037**; effect of adrenal hormones on blood phospholipides, **3050**; effect of chorionic gonadotrophin on transitory zone of the mouse adrenal, **3084**; book, adrenal cortex, **3122**; adrenal-hyaluronidase relationship in infection, **3517**; chorionic gonadotrophin, A.C.T.H. and adrenal-hyaluronidase relationship, **3744**.
See also Books, endocrinology; Cholesterol.
Cortical Hormones. Chemical and biochemical aspects, **840**; regulation of secretion of cortical hormones, **1175**; cortical steroids in the treatment of cancer, **1429**; interrelationship of desoxycorticosterone, cortisone and vitamin C and genesis of mesenchymal lesions, **1496**; local action of adrenocortical hormones on skin, **1499**; studies on the role of adrenal cortex in adenosine triphosphate shock, **1521**; action on the fibrinolysin-antifibrinolysin system in serum, **2393**; adrenal cortex and water metabolism, **2703**; effect of adrenal cortical steroids upon formation of carbohydrate by rat liver slices, **2704**; loss of protection by vaccination following cortisone treatment in experimentally infected mice, **2829**.
See also Adrenal Gland, cortisone; Desoxycorticosterone.
Cortisone. Effect on TB. in mice, **641**; studies on A.C.T.H. and cortisone, **1141-1147**; in experimental syphilis, **1148**; in rheumatoid disease in swine, **1149**; in treatment of rheumatoid arthritis, **1497**; effect on fibrosis of the liver in rats, **1498**; lipaemia after administration, **1818**; effect on delayed type bacterial hypersensitivity, **1819**; summary of clinical uses, **2126**; effect on experimental cardiovascular and renal lesions produced by anaphylatic hypersensitivity **2127**; response of tuberculin skin test to A.C.T.H. and cortisone in tuberculous g. pigs, **2229**; failure to suppress tuberculin skin reactions in tuberculous g. pigs, **2230**; effect on development of tuberculous lesions and modification by streptomycin, **2232**; role in inflammation, **2380**; effect on "anaphylactoid reaction", **2606**; present status in general medicine, **3019**; effect on plasma cells and reticulo-endothelial system in hyperimmuized rabbits, **3020**; influence on mechanism of infection, **3021**; comparison of the effects of cortisone and aminopterin, **3332**; effect on the pathologic responses of guinea pigs infected with fungi, viruses and bacteria, **3333**; lethal infection with Coxsackie virus in cortisone treated mice, **3554**; effect on concentration of circulating antibody, **3614**.
Medullary Hormones. Eosinophile response to intravenous epinephrine or histamine in anaesthetized dogs, **218**; release of A.C.T.H. by direct application of epinephrine to pituitary grafts, **532**; resistance to epine-

ADRENAL GLAND—Medullary Hormones—[cont'd.] phrine stress in dogs, 1176; effect of adrenalin on the number of circulating eosinophils on excretion of uric acid and creatinine, 2146; metabolism of adrenalin, 2702; anti-inflammation hormone action of adrenalin, 3706.
See also Helvedrin.
ADRENALIN. See Adrenal Gland, medullary hormones.
ADRENOCORTICOTROPHIC HORMONE (A.C.T.H.). Effect on antibody levels, 410; release by direct application of epinephrine to pituitary grafts, 532; effect of hypophysectomy, adrenalectomy and A.C.T.H. on phosphorus metabolism of rats, 545; effect on amount of circulating antibodies, 750; relation of adrenal cortical steroids to antibody release, 751; studies on A.C.T.H. and cortisone, 1141-1147; use in rheumatoid disease in swine, 1149; regulation of cortical hormones, 1175; in treatment of rheumatoid arthritis, 1497; local action of adrenocortical steroids on skin, 1499; mechanism and control, 1520; ability to alter delayed type bacterial hypersensitivity, 1819; effect on iodine excretion, 1850; effect on number of circulating eosinophils on excretion of uric acid and creatinine, 2146; response of tuberculin skin test to A.C.T.H. and cortisone in tuberculous g. pigs, 2229; failure to suppress tuberculin skin reactions in tuberculous g. pigs, 2230; effect on "anaphylactoid reaction", 2606; effect on experimental influenza type A infection, 2896; in treatment of experimental type A influenza in the ferret, 2897; present status in general medicine, 3019; influence on mechanism of infection, 3021; the whale hypophysis with special reference to its A.C.T.H. content, 3051; effect on concentration of circulating antibody, 3614; chorionic gonadotrophin, A.C.T.H. and adrenal-hyaluronidase relationship, 3744.
AEDES. Aircraft disinsectization, 426; effect of insecticides, 756; sulphonamides as factors increasing susceptibility of A. aegypti to Pl. gallinaceum, 2049.
AEGYPTIANELLA. In Kenya, 2456.
AELUROSTRONGYLUS. Study of the biology of the cat lungworm, A. abstrusus, 3644.
AEPYCEROS. See Antelopes.
AEROSOLS. Pulmonary retention of aerosols, 845; behaviour of aerosols of Str. zooepidemicus, 916; aerosol and intratracheal penicillin, 1129; electronic methods of counting aerosol particles, 1551; preparation and mesaurement of concentration of bacterial aerosols, 1552; low pressure aerosols, 2381; generator for producing dry aerosols with organic insecticides, 2436.
See also Parasiticides, general.
AFRICA. See Aujeszky's Disease; Cattle, gen; Glossina; Newcastle Disease; Parasiticides, general; Poisons and Poisoning; Reports; Rickettsia infection, in dogs; Rickettsia Infection, in man; Spirillum Infection; Squirrels; Ticks, Ixodidae; Trypanosoma Infection.
AGALACTIA, CONTAGIOUS. Diagnosis in sheep and goats, 375; complement fixation, for diagnosis, 3515; serological tests, 3516.
AGALACTIA, GENERAL. See Lactation.
AGAR. See Technique and Apparatus, media.
AGE. Effect of age on rat liver regeneration, 466; changes in the spleen of horses caused by old age, 1825; determination of age of bovine foetuses, 1853; in relation to intrarenal pressure, 2149; effect of high fat diet on joints of aging mice, 2322; age at first calving in relation to subsequent performance, 2434; effect on "formaldehyde induced" arthritis in rats, 2991; ages of permanent dentition in zebu cattle in Brazil, 3754.
See also Blood, corpuscles (red); Brucella Infection, immunology; Fowl Paralysis and Avian Leucosis; Ticks, Ixodidae; Vitamins, vitamin B complex.
AGENE. Effect of anticonvulsants on agene-induced convulsions, in dogs, 179; toxic effect of agenized zein crystals on certain bacteria, 501; toxic factor from agenized proteins, 502; agenized flour, 503; canine epilepsy caused by flour bleached with nitrogen trichloride, 2356; effect of diet on toxicity of toxic factor from agenized flour, 3322; action of nitrogen trichloride on certain proteins, the toxic factor, 3699.
AGGLUTINATION TEST. See Immunology, agglutination.
AGKISTRODON PISCIVORUS. See Snake Venoms.
AGRANULOCYTOSIS. See Blood, diseases.
AGRICULTURE. See Reports; Zootechny.
AIRBORNE INFECTIONS. See Aerosols; Diseases, General; Disinfectants, Antiseptics and Sterilization.
AIRCRAFT. Disinsectization in West Africa, 426; aerosols for disinsectization, 427; disinsectization of aircraft, 758; treatment of airplanes to prevent transportation of insects, 759; factors affecting efficiency of aircraft disinsectization procedures, 2687; effect of air-transportation on clinical conditions, 3109; aerial transport of feed for flood-bound sheep in Australia, 3757.
AIR-EMBOLISM. See Circulatory System, diseases.
ALARM REACTION. See Stress.
ALASKA. See Echinococcus.
ALBEDO. See Skin.
ALCOHOLS. See Ketosis; Milk and Milk Products, excretion of drugs.
ALGAE. Poisoning in cattle in Ontario by algae, 1479.
ALGERIA. See Leishmania Infection, in dogs, Leptospira Infection, in cattle; in dogs; Newcastle Disease; Rickettsia Infection, Q fever.
ALIMENTARY TRACT. See Digestive System.
ALIPHATIC ACIDS. Effect of aliphatic acids on activity of antibacterial agents, 1128.
ALKALI DISEASE. See Selenium.
ALLANTOIC FLUID. See Embryos, Fowl.
ALLERGENS. See Immunology, allergens.
ALLOXAN. Causing renal cortical necrosis in sheep, 181; in murine bartonellosis, 2872.
ALPHA-NAPHTHYL THIOUREA (ANTU). Poisoning of dogs with ANTU rat poison, 1118; rodenticides, 1186.
ALPHA-PELATIN. See Neoplasms, treatment.
ALPHA-TOCOPHEROL. See Vitamins, vitamin E.
ALTITUDE. Use of oxygen in hatching of eggs at high altitudes, 886; survival of day-old chicks under high altitude transport conditions, 1548; causing polycythaemia (erythrocytosis) in lambs, 2659; distribution of bovine theileriasis, vector ticks and influence of altitude, in Ruanda-Urundi, 3533.
ALUMINIUM. Aluminium gel in rabies, rinderpest, swine erysipelas and blackleg vaccines, 2045; alkali-dissolved diphtheria toxoid-antitoxin floccules adsorbed on aluminium, 2046 amelioration of fluorosis by aluminuim salts, 2105.
AMBLYOMMA. See Ticks, Ixodidae.
AMIDINES. See Trypanosoma Infection, treatment.
AMINO ACIDS. Effect on trypanocidal activity of parasorbic acid, 525; abnormal feathering in chicks after feeding optimal levels of lysine in absence of arginine, 798; action of Br. abortus on, 1658; use of labelled amino acids in the study of protein metabolism of normal and malignant tissues, 1753; composition of bovine colostrum and milk, 1835; studies in utilization, 2325; in tuberculin protein fractions, 2825; action of penicillin on growth response of gram-negative bacilli to amino acids and peptides, 3521.
See also p-Aminobenzoic Acid; 4-Amino-Pteroylglwtamic Acid; p-Aminosalicylic Acid (P.A.S.); Cysteine; Glycine; Proteins; Tyrosine.
p-AMINOBENZOIC ACID. Action of paludrine on Pl. berghei and inhibition by p-aminobenzoic acid, 351; determination in foodstuffs and elimination in the urine, 3039.
AMINOPHYLLINE. Effect in emphysema, 2122.
AMINOPTERIN. Therapeutic suppression of tissue reactivity, comparison of the effects of cortisone and aminopterin, 3332.
4-AMINO-PTEROYLGLUTAMIC ACID. Acute toxicity in dogs, g. pigs and rabbits, 2342.
AMINOPYRINE. Effect of salicylates, aminopyrine and related compounds on anaphylactic shock in rabbits, 1807.
p-AMINOSALICYLIC ACID (P.A.S.). Medium for tubercle bacilli resistant to P.A.S. and streptomycin, 598; effect of benemid and caronamide on P.A.S. plasma concentrations, 834; tuberculostatic action of P.A.S. derivatives and similar substances in vitro, 928; effect of dihydrostreptomycin-para-aminosalicylate on experimental TB. in g. pigs, 1263; for treatment of Johne's disease, 2833.
AMMONIA. Avian keratoconjunctivitis caused by ammonia vapour, 1795.
See also Oedema, pulmonary; Corynebacterium Infection, general.
AMNIOTIC FLUID. See Genital System, general.
AMOEBA. In rats, 337.
AMPHENONE "B". Effect on thyroid, adrenals and genital tract of the female rat, 2379.
AMPHETAMINE. Treatment of acute barbiturate poisoning, 2998.
ANAEMIA, EQUINE INFECTIOUS. A review, 374; in Uruguay, 719; Report, Sweden, 902; haematological response of horses to virus, 2278; report on published work, 2587; discussion on causes, 2900; epidemiology and control, 2901; experimental study, 3558; histiocytic reaction, 3559; in Norway, 3770-3771; in Sweden, 3772.
ANAEMIA, GENERAL. Colloidal iron in anaemia, 1486; radio iron absorption in anaemic dogs, 2081; metabolism of tyrosine in experimental megaloblastic anaemia and in scurvy of monkeys, 2326; pernicious anaemia and vitamin B_{12}, 2646; ictero-anaemia, eperythrozoonosis or anaplasmosis-like disease of swine proved to be caused by a filtrable virus, 2905.
See also Nutrition, swine.
ANAESTHESIA & ANALGESIA. In pigs, 208; electroplectic anaesthesia, 253; sudden death during chloral hydrate anaesthesia, 821; ethyl chloride in veterinary anaesthesia, 841; chloral hydrate combined with magnesium sulphate and pentobarbital sodium, 1153; measurement of analgesia in animals, 2194; intravenous ether for general anaesthesia in cattle, 3336; a review of general anaesthetics for horses, 3704; a synopsis, 3778.
See also Blood, general; Curare.
ANAL GLANDS. See Digestive System, general.
ANAPHYLACTIC SHOCK. See Immunology, anaphylaxis.
ANAPLASMA INFECTION. Treated with aralen dihydrochloride, 1003; report, California, 2203; A. marginale ("Tristeza") in Uruguay, 2557; production of an anti-

ANAPLASMA INFECTION—[cont'd.]
gen for complement-fixation tests, 2563; ictero-anaemia, eperythrozoonosis or anaplasmosis-like disease of swine proved to be caused by a filtrable virus, 2905; A. centrale in Roumania, 3202; in Zanzibar, 3419; in U.S.A., 3429; treatment with benzoquinoxonal, 3535; blood picture in premunized cattle, 3616.
See also Theileria Mutans.
ANATOMY. Anatomy and pathology of the bovine teat, 812; nictitating membrane, 863; preen gland, 864; research on Indo-Chinese buffaloes, 1522; the nasolachrymal duct in the goat, 1828; diet for rats to facilitate dissection of nerves, 2156; structure of the umbilical cord of the foal, 2351; glands in the external auditory meatus of the cat, 2694; of the tongue in the buffalo, 3054; functional anatomy of the ox prostate, 3362.
See also Books, anatomy; Elephants; Eyes, general; Mammary Gland; Zebu Cattle.
ANATOXINS. See Clostridium Tetani Infection (Tetanus); Staphylococci.
ANATUBERCULIN. See Mycobacterium Tuberculosis, immunology.
ANCYLOSTOMA. Treatment of dogs infected with larvae of A. caninum, 766; associated with spasmophilia and canine hysteria, 2097; chemical control of larvae of the dog hookworm, 3275.
ANDROGENS. See Sex Hormones.
ANEURIN. See Vitamins, vitamin B_1 (Thiamine).
ANEURINASE. Studies on bacterial aneurinase, 2382.
ANGIOSTRONGYLUS. A. vasorum infestation in a dog, 2064.
ANGLO-EGYPTIAN SUDAN. See Books, miscellaneous; camels; Food Hygiene, food poisoning (in man); Glossina; Trypanosoma Infection, general; treatment.
ANIMAL HUSBANDRY. See Zootechny.
ANIMAL PROTEIN FACTOR. Effect of an A.P.F. concentrate containing aureomycin on growth and well-being of dairy calves, 1766; effect on young lambs, 1767; observations on growth response of pigs, 2323; influence of A.P.F. and aureomycin on the growth of dairy calves, 3013.
ANKYLOSIS. See Joints.
ANOESTRUS. See Genital System, oestrous cycle.
ANOPHELES. Aircraft disinsectization, 426; vitamins A and E in A. maculipennis var. atroparvus, 1037.
ANOXIA. See Circulatory System, diseases.
ANTELOPES. Disease in duiker (Sylvicapra grimmia) caused by Cytauxzoon sylvicaprae, 355; cysticercosis of impala or rooibok (Aepyceros melampus) and wildebeest, 1410.
ANTHELIN. See Anthelmintics, for dogs.
ANTHELMINTICS.
General. Chemotherapy of helminthic diseases, 443; "mandaverm" for treatment of Ascaris infestation, 445 and 768; treatment of filariasis in man, 450; triphenylmethane derivatives, 837; penetration of anthelmintics into A. lumbricoides, 838; anthelmintic activity of a piperazine derivative, 1057; treatment of internal parasites, 2063.
See also Antimony; Areca; Filix Mas.
For Cats. See Caricide.
For Dogs. Hetrazan in the treatment of Dirofilaria immitis infection, 126; hexyl-resorcinol, 444; "anthelin" against tapeworms and roundworms, 764; hetrazan treatment of filariasis, 2068.
See also Ancylostoma; Caricide.
For Horses. "Reconox" against strongylosis in horses, 440; treatment of larval strongylus vulgaris infestation, 441; "mandaverm" for treatment of Ascaris infestation, 445.
See also Phenothiazine.
For Swine. Sodium fluoride, 122; ascarol, an anthelmintic containing chenopodium oil, 1056.
See also Ascarids.
For Poultry. Phenothiazine.
See also Syngamus.
For Sheep. See Hexachlorethane; Phenothiazine.
ANTHRAX. See Bacillus Anthracis Infection [Anthrax].
"ANTI-ALIMENTS". See Nutrition, general.
ANTIBIOTICS.
General. Synergism and antagonism of antibacterial substances, 199; control of bacteria in bovine semen extenders with sulphanilamide and antibiotics, 240; in mastitis, 298; clinical use, 828; effect of aliphatic acids on activity of antibacterial agents, 1128; bacteriological study of antibiotics, 1132; study on polymyxin, chloromycetin and aureomycin, 1134; bull semen extenders containing sulphanilamide and antibiotics, 1194; failure in experimental rabies, 1347; effect of neomycin and other antibiotics on bacteria viruses and protozoa, 1491; in Br. melitensis infection of mice, 1636; in vitro effect on Trichomonas, 1666; in the U.S.A., 1811; effect on P. multocida, 1934; effect on agents of the psittacosis-lymphogranuloma group, 2023; in the treatment of mouse pneumonia caused by virus of feline pneumonitis, 2026; for intrauterine treatment of vibrionic sterility, 2248; effect on growth of piglets, 2320; interference of aureomycin and terramycin with the action of penicillin, 2376; antibiotic activity of growth factor analogues, 2681; effect on intestinal microflora and growth of turkeys and pigs, 3012; an antibiotic assay tray, 3094; chemotherapeutic experiments with grey lung virus, 3236; for control of bacteria in bull semen, 3735.
See also Candida; Rickettsia Infection, in dogs.
Bacterial Products. Fertility of bovine semen in extenders containing sulphanilamide and antibiotics, 241; antibiotics produced by micrococci and streptococci, 915; phages affecting streptomyces griseus, 1387; antibiotic DINR.49-1 (fungocin) produced by B. subtilis against pathogenic fungi, 3017; an antibiotic from Pf. whitmori, 3703.
See also Bacitracin; Polymyxin; Subtilin.
Fungous Products. Fertility of bovine semen in extenders containing sulphanilamide, penicillin, streptomycin and polymyxin, 241; Candida and Aspergillus endocarditis and role of antibiotics in dissemination of fungous diseases, 3180.
See also Aspergillus; Aureomycin; Chloramphenicol; Neomycin; Penicillin; Streptomycin; Terramycin.
Lichen Products. Antibiotics in Lichens, 2378.
ANTIBODIES. See Immunology, antibodies.
ANTICHOLINESTERASE. Poisoning by p-nitrophenyl diethyl thiophosphate: a contribution to the study of anticholinesterase compounds, 2997.
ANTICONVULSANTS. Against agene-induced convulsions in dogs, 179.
ANTIGENS. See Immunology, antigens.
ANTIHISTAMINICS. See Histamine.
ANTIMONY. Content of plasma and urine after treatment with antimony compounds, 1126; effect of antimony compounds on D. lanceolatum, 2934-2935.
ANTISEPTICS. See Disinfectants, Antiseptics and Sterilization.
ANTIVENINS. See Snake Venoms.
ANTRYCIDE. See Trypanosoma Infection, treatment and control.
ANTU. See Alpha-Napthyl Thiourea (A.N.T.U.).
ANUS. See Digestive System, general.
AORTA. See Circulatory System, aorta.
A.P.F. See Animal Protein Factor.
APPARATUS. See Technique and Apparatus.
ARALEN DIHYDROCHLORIDE. In acute bovine anaplasmosis, 1003.
ARCTIC REGIONS. Avitaminosis in dogs in the Arctic, 1769; presence in the Arctic of spores of cereal pathogens, 2453.
See also Trichinella.
ARECA. Action on tapeworms, 2626.
ARGAS. See Ticks, Argasidae.
ARGENTINA. See Echinococcus; Foot and Mouth Disease, control; Nematodirus; Services, Veterinary, Argentina.
ARGININE. See Amino Acids.
ARMADILLO. Susceptibility of Chaetophractus villosus (armadillo) to F. & M. disease, 1673.
ARMY VETERINARY SERVICES. Reports of the American army veterinary corps in Germany, 1854-1855; veterinary and remount services of the German army, 3067; the military veterinarian and modern defence, 3407.
ARRHYTHMIA. See Respiratory System, general.
ARSENIC. Portal cirrhosis and ascites following arsenic poisoning, 499; chronic arsenical poisoning in the horse, 1793; treatment of parasitic bronchitis with subcutaneous injections of arsenic compounds, 2630; chronic arsenical poisoning in horses, 2668 relative efficiency of arsenicals, benzene hexachloride and D.D.T. in tick dipping tanks, 2686; residual arsenic and strychnine in tissues of treated cattle, 2996.
ARSOCOLL. Naganol (suramin) and arsocoll treatment of horses infected with Tr. evansi, 1663; treatment of surra, 2542.
ARTERIES. See Circulatory System, arteries.
ARTERIOSCLEROSIS. See Circulatory System, diseases.
ARTHRITIS. Use of cortisone and A.C.T.H. in rheumatoid disease in swine, 1149; A.C.T.H. and cortisone in treatment, 1497; effects of cold, ascorbic acid and age on "formaldehyde-induced" arthritis in rats, 2991.
See also Corynebacterium Infection, in sheep; Corynebacterium Kutscheri; Erysipelothrix Rhusiopathiae Infection, in sheep; Streptococci, general.
ARTHROPOD PARASITES. See Aedes; Anopheles Blowflies & Fleshflies; Bugs; Culex; Fleas; Flies; Glossina; Lice; Mites; Mosquitoes; Parasitic Infestation, General; Phlebotomus; Pneumonia, virus; Ticks.
ASCARIDIA COLUMBAE. Concurrent A. columbae infestation and coccidiosis in homing pigeons, 701; study in pigeons, 1749.
See also Phenothiazine.

ASCARIDIA GALLI. Effect of purified diets on host-parasite relationship of fowls and A. galli, **448**; effect of caecal coccidiosis on susceptibility to A. galli, **449**; pathogenicity, **769**; viability of eggs, **2633**.
ASCARIDS. Treatment in horses, **445**; in pigs, **446**; Ascaris haemoglobin as indicator of oxygen, **447**; soya-bean meal and resistance of fowls to ascarids, **472**; toxicity and histamine content, **2637**.
See also Ascaridia Galli; Ascaris Equorum; Ascaris Lumbricoides; Ascaris Megalocephala; Toxocara.
ASCARIS EQUORUM. Viability of ova, **2066**.
ASCARIS LUMBRICOIDES. Relationship in mice of intestinal emptying time and natural resistance to A. lumbricoides from pigs, **123**; haemoglobins of A. lumbricoides, **555**; penetration of anthelmintics, **838**; production of volatile acid by A. lumbricoides, **1060**; complete elimination of micro-organisms from A. lumbricoides, **2948**; report, Canada, **3411**.
ASCARIS MEGALOCEPHALA. Hatching of ova on silica-gel, **1748**; cultivation of eggs on solid media, **2632**.
ASCARIS VITULORUM. In calves in Australia, **3643**.
ASCAROL. See Anthelmintics, for swine.
ASCITES. Passage of radioactive erythrocytes from peritoneal cavity into blood stream during experimental ascites, **1169**.
See also Arsenic.
ASCORBIC ACID. See Vitamins, vitamin C.
ASPERGILLUS. Effect of A fumigatus filtrate on acid-fastness of M. tuberculosis and M. johnei, **674**; experimental aspergillosis in laboratory animals, **1963**; augmenting action of lecithin and lipoids of A. fumigatus in antibody production, **2297**; producing a tumour-retarding agent, **3287**; A. fumigatus, causing abortion in a cow, **3505**.
See also Circulatory System, diseases.
ASPHYXIA. Lesions in brain and organs of rats caused by nitrogen asphyxia, **214**.
ASSES. See Donkeys.
ASTHMA. See Respiratory System, diseases.
ASTIN M. A commercial growth factor, **2974**.
ATAXIA. In lambs in South Australia, **1893**; in Australia, **3412**.
See also Manganese.
ATEBRIN. Treatment of Giardia canis infection in dogs, **345**.
ATELECTASIS. A study, **489**.
ATHEROMATOSIS. See Cholesterol.
ATHEROSCLEROSIS. See Circulaory System, diseases.
ATOMIC ENERGY. Veterinary aspects of atomic explosion, **270**; effects of extreme heat on man, **1560**; protection of workers in atomic energy plants, **1888**; effect of atomic explosions, **1889**; the atomic bomb, **2760**; medical aspects of atomic warfare, **3108**; effect of the atomic bomb on Japanese army animals, **3408**.
See also Radiation Sickness; Radioactivity.
ATROPHY, TESTICULAR. See Cholesterol.
AUJESZKY'S DISEASE. Research, **709**; Serial passage of virus in rabbits by skin scarification, **710**; in a dog, **1006**; in a dog in Tangier, **1340**; in pigs, sheep and a calf, **1674**; in Italy, **2000**; in a cat in Istanbul, **3214**.
AUREOMYCIN. In infectious sinusitis of turkeys, **93**; control of bacteria in bovine semen extenders with sulphanilamide, polymyxin and aureomycin, **240**; effect on Staph. pyogenes in the bovine udder, **295**; an acute brucellosis, **321** and **965**; in murine bartonellosis, **331**; aureomycin and growth of chicks, **519**; in brucellosis, **669**; in Trichomonas vaginalis vaginitis, **695**; in anthrax, **918**; in summer mastitis, **937**; action on Brucella in vitro, **964**; in experimental brucellosis, **966**; study on polymyxin, chloromycetin and aureomycin, **1134**; failure in treatment of Br. suis infection, **1283**; effect on E. rhusiopathiae, **1614**; effect on fattening of lambs, **1765**; effect on an A.P.F. concentrate containing aureomycin on growth and well-being of calves, **1766**; bacteriological control of therapy, **1812**; in actinomycosis, **1964**; effect on agent of feline pneumonitis, **2024**; in mouse pneumonia caused by virus of feline pneumonitis, **2026**; evaluation and correlation between in vivo and in vitro activity, **2120**; modifying responses of pullets to oestrogen, **2151**; In Q fever, **2293**; in experimental rickettsial and virus infections, **2295**; observations on growth response of pigs, **2323**; effect of various levels of vitamin B_{12} upon growth response produced by aureomycin in ducks, **2344**; interference with the action of penicillin, **2376**; a substance from egg yolk which protects aureomycin from deterioration, **2377**; in brucellosis, **2519**; in staphylococcal mastitis, **2808-2809**; in toxoplasmosis in rabbits, **2885**; effect on digestion in steers, **2960**; for septicaemic diseases of newborn foals, **3004**; influence of A.P.F. and aureomycin on the growth of dairy calves, **3013**; in acute experimental toxoplasmosis, **3204**; effect on splenectomized rats, **3330**; effect of bull semen, **3735**; toxicity to bull spermatozoa, **3736**.
See also Pasteurella Septica; Rickettsia Infection, Q fever; Staphylococci.
AURICULAR FIBRILLATION. See Circulatory System, diseases.
AUSTRALIA. See Acacia; Aircraft; Ascaris Vitulorum; Books, diseases, general; Cobalt; Diseases, General; Erysipelothrix Rhusiopathiae Infection, in swine; Filaroides Osleri; Law, Australia; Leptospira Infection, general; Lice; Lucilia; Mycobacterium Johnei Infection (Johne's Disease); Mycobacterium Tuberculosis Infection, general, in poultry; Nutrition, in sheep; Pastures and Grazing; Phalangers; Pleuro-Pneumonia Bovine Contagious; Poisons and Poisoning, plant poisoning; Reports, Australia; Rickettsia Infection, Q Fever Services, Veterinary, Australia; Ticks, Ixodidae; Toxoplasma Infection; Zootechny.
AUSTRALORBIS. See Snails.
AUSTRIA. See Food Hygiene, meat inspection; Insemination, Artificial; Law, Austria.
AUTOLYSINS. See Bacteria, general; Meningococci.
8-AZAGUANINE. Effect on animal neoplasms, **133**.
AZIDE. See Poisons and Poisoning, general.

B

BABESIA ARGENTINA. See Babesia Infection [Piroplasmosis] in cattle.
BABESIA BIGEMINA. In Uruguay, **2557**.
BABESIA BOVIS. See Babesia Infection [Piroplasmosis] in cattle.
BABESIA CANIS. See Babesia Infection [Piroplasmosis], in dogs.
BABESIA INFECTION [PIROPLASMOSIS].
General. Piroplasmosis and Chagas' disease in Uruguay, **703**; Babesia rodhaini from a wild rodent in the Belgian Congo, **1330**; a species of Babesia in an Indian wild cat, **3201**.
In Cattle. B. argentina, B. bovis and Theileria annulata infection in cattle in Bulgaria, **68**; in Australia, **272-274**; lyphophized blood for immunization of cattle against piroplasmosis, **1002**; "Tristeza" (tick-fever, piroplasmosis, babesiasis, anaplasmosis) in Uruguay, **2557**; in Nyasaland, **2769**; in Zanzibar, **3419**; blood picture in cattle undergoing premunization against anaplasmosis and babesiasis, **3616**; in Nyasaland, **3768**; in Norway, **3771**; in Sweden, **3772**.
In Dogs. In Trinidad and Tobago, **1237**; experimental infection of a jackal with B. canis, **2559**; atypical symptomatology, **2883**.
In Horses. Combined with helminth infestation, **1670**; acaprin treatment, **2266**; Hyalomma species as vectors, in Turkey, **2556**; D. marginatus, a vector, **3532**.
In Sheep. In Nigeria, **1237**; active and passive foci and anachromatism of agents in certain regions, **2558**.
Treatment. In horses with acaprin, **2266**; chemoprophylaxis with acaprin, **2882**; comparative effectiveness of urea preparations LP_2 and LP_4, acaprin and trypaflavine, **3008**.
BABESIA RODHAINI. Babesia rodhaini from a wild rodent in the Belgian Congo, **1330**.
"BABY PIG DISEASE". See Youngstock, diseases, piglets.
BACILLUS ANTHRACIS INFECTION [ANTHRAX]. Immunological studies, nucleoproteins, **10**; standardization of vaccine and serum, **11**; in South Africa, **275** and **276**; in Palestine during 1921-46, **300**; avirulent anthrax vaccine, **301**; effect of methyl bromide on B. anthracis, **524**; in Leeward Islands, **622**; preparation of antiserum, **636**; in Union of S. Africa, **899**; in Cyprus, **900**; in Sweden, **902**; treatment with aureomycin, **918**; control of occupational anthrax, **919** and **920**; in South Africa, **1230**; in Cyprus, **1231**; in Nigeria, **1237**; in Bechuanaland Protectorate, **1239**; synthesis of glutamic acid and glutamyl polypeptide by B. anthracis, **1252**; cleansing action of rain in freeing soil from anthrax spores, **1582**; influence of weather on sheep and goats vaccinated with a Russian vaccine, **1915**; control of industrial anthrax, **1916**; sporulation and viability in relation to temperature and humidity, **1917**; spores in soil, **1918**; disinfection of goat hair, **2176**; in St. Kitts-Nevis, **2198**; in Sierra Leone, **2201**; in Yugoslavia, **2205**; epidemiology, in Turkey, **2225**; prevention in Turkey by abattoir control, **2226**; industrial anthrax in the U.S.A., **2227**; in Denmark, **2459**; in French Guiana, **2463**; pathogenesis, **2485**; viability of spores in sediment from tan pits, **2486**; death following immunization, **2487**; in Ceylon, **2766-2767**; in Swaziland, **2770**; in N. Rhodesia, **2774**; in Cyprus, **2781**; in Holland, **2782**; a selective medium, **2816**; resistance of spores to perchloride of mercury, chlorinated lime and chloramine, **2817**; essence of immunity, **3137**; problem in the leather industry, **3138**; in British Guiana, **3417**; in Zanzibar, **3420**; in Northern Rhodesia, **3421**; in Sierra Leone, **3422**; bacterial antigens and vaccines in anthrax immunity, **3447**; variation in the serum T-agglutinin during infection in rabbits, **3448**; in Cyprus, **3766**; in Eire, **3769**; in Norway, **3770-3771**; in Sweden, **3772**.
BACILLUS ENTEROTOXICUS. See Clostridium Welchii.

BACILLUS SUBTILIS. Activating effect of calcium on a bactericidal substance for B. subtilis in human serum, **2121**; action of filtrates on rabies virus, **2570**; producing DINR. 49-1 (fungocin), an antibiotic against pathogenic fungi, **3017**.
BACITRACIN. Effect of bacitracin on renal function, **563**.
BACON. See Food Hygiene, meat inspection.
BACTERIA, GENERAL. Anaerobic mesophilic cellulolytic bacteria, **45**; reaction of bacterial cells with formaldehyde, **209**; viability of dried baterial cultures, **333**; bacterial filtering action of gauze masks, **335**; National Collection of Type Cultures, **336**; serological relationship between bacteria and host, **404** and **405**; toxic effect of agenized zein crystals on certain bacteria, **501**; histamine and thiamine inhibition of influence of antihistamines on bacteria, **522**; biochemistry of bacterial toxins, **569**; effect of bacterial spreading factors on TB., **642**; relation of gram staining and penicillin sensitivity to occurrence of phosphoric ester in bacteria, **680**; drugfastness, **827**; agglutination by streptomycin, **829**; survival in dust, **844**; action of micro-organisms on fats, **857**; growth in the presence of peptones, **991**; stability of nutritional mutants, **992**; disappearance of folic acid from bacterial cells, **995**; effect on fertility of bovine semen, **1196**; recovery of viable micro-oragnisms and viruses from vapours of materials during freeze-drying, **1226**; cultural properties and pathogenicity of certain micro-organisms obtained fom neoplasms, **1428**; antibacterial action of some pyrrole derivatives, **1488**; bacterial growth factors, **1654**; ion antagonisms in micro-organisms, **1660**; effect of heparin on growth of bacteria and yeasts, **1661**; bacterial variants in patients treated with chloramphenicol, **1813**; ability of A.C.T.H. and cortisone to alter delayed type bacterial hypersensitivity, **1819**; methods for the study of bacteria and pleuro-pneumonia-like organisms, **1874**; a method for determination of susceptibility of materials to attack by micro-organisms, **1875**; a menstruum for drying bacteria and viruses, **1876**; bacterial resistance to chloramphenicol, **1935**; electron and light microscopic studies of bacterial nuclei, **1936**; relation of gram stain to cell wall and ribonucleic acid content of the cell, **1981**; effect of antihistamines on bacterial decarboxylation of histidine, **1982**; colony counts on strips of agar in tubes, **2181**; lethal effect of triethylene glycol vapour, **2224**; development of bacterial flagella in the germinating microcyst, **2254**; international Code of Nomenclature, **2536**; a study on bacterial phosphatases, **2538**; structure and activities of the bacterial surface, **2874**; decline and death of bacterial populations, **3189**; dye exchange in bacterial cells and the theory of staining, **3190**; growth in vivo and action of penicillin, **3486**; genetics of bacteria, **3522-3523**; splanchnic removal from blood stream of leucopenic rabbits, **3719**.
See also Aerosols, Amino Acids; Antibiotics; Books, bacteriology; Committees, Conferences and Congresses; Digestive System, fauna and flora, ruminant digestion; Disinfectants, Antiseptics and Sterilization; Genital System, semen and spermatozoa; Milk and Milk Products, bacterial content; Oxidation-Reduction Potential; Technique and Apparatus, bacteriological, staining; Water; Wounds.
BACTERINS. See Brucella Infection, immunology.
BACTERIOPHAGE. Action on host cells, **739**; phages affecting streptomyces griseus, **1387**; radioactive studies of phosphorus metabolism of T2r† bacteriophage with Bact. coli, **1713**; studies on the relationship between virus and host cell, preparation of T2r† bacteriophage labelled with radioactive phosphorus, **2037**; an assay in virus reproduction, **2292**; properties of X-ray-inactivated bacteriophage, **3251**; for rapid differentiation between P. pestis and P. pseudotuberculosis, **3477**; production by B. megatherium, **3599**; of S. typhi-murium, **3600**; "excessive growth" phenomenon encountered during investigation of S. typhi-murium and its symbiotic bacteriophages, **3601**.
BACTERIOSTASIS. Identification of Br. abortus Strain 19 by dye bacteriostasis, **1638**; effect of pH on bacteriostatic activity of nitrophenols, **2692**.
BACTERIUM COLI. Cytological studies, **652**; hydrogenase production by Bact. coli, **990**; aberrant heterozygotes of Bact. coli, **993**; mutants of Bact. coli, **994**; colibacillosis in sheep, **1622**; demonstration of chromatinic bodies of Bact. coli and Proteus vulgaris under the phase contrast microscope, **1623**; radioactive studies of phosphorus metabolism of T2r† bacteriophage with Bact. coli, **1713**; in vitro resistance to mixtures of sulphonamides, **2238**; light-induced recovery of Bact. coli from ultraviolet radiation injury, **3520**.
BACTERIUM LACTIS AEROGENES. See Oxidaition-Reduction Potential.
BACTERIUM VISCOSUM EQUI. See Joint-Ill.
BADGERS. See Rabies, in wild animals.
B.A.L. Against lead poisoning, **176**; book, **288**; as a trypanocide, **2260**.
BALANTIDIUM COLI. In Uganda Protectorate, **2768**.
BARBITURATES. Metabolism of, **2679**; treatment of barbiturate poisoning in man with nikethamide and amphetamine, **2998**.
BARTONELLA INFECTION.
General. Aureomycin and terramycin in murine bartonellosis, **331**; alloxan treatment of murine bartonellosis, **2872**; research on B. muris, **3514**.
In Dogs. In Venezuela, **1300**.
BASUTOLAND. See Reports, Basutoland.
BATS. Newcastle disease in the bat Myotus lucifigus, **2915**.
B.C.G. See Mycobacterium Tuberculosis Infection, immunology (B.C.G.).
BECHUANALAND PROTECTORATE. See Reports, Bechuanaland Protectorate.
BEETS. See Sugar Beet.
BEHAVIOUR OF ANIMALS. Physiological mechanism of animal behaviour, **1574**; studies in cattle in Britain, **2454**; effect of lesions of the hypothalamus on behaviour in dogs, **2724**; observations on lambing behaviour in ewes in New Zealand, **2982**; grazing behaviour of cattle in the tropics, **3403**; behaviour of cattle on tropical pastures, **3732**.
See also Glossina.
BELGIAN CONGO. See Congo, Belgian.
BELGIUM. See Brucella Infection, in cattle; Brucella Tularensis Infection (Tularaemia); Foot & Mouth Disease, immunology; Hepatitis, canine virus; Insemination, Artificial, general; Newcastle Disease, immunology; Oedema Disease of Swine; Pasteurella Infection, general.
BENADRYL HYDROCHLORIDE. See Mycobacterium Tuberculosis Infection, tuberculin and tuberculin tests.
BENEMID. Effect on P.A.S. plasma concentrations, **834**.
"BENT LEG". In lambs, **1781**.
BENZENE HEXACHLORIDE. In control of ticks, **110**; in pork, **228**; transmission of "lumpy wool" (Actinomyces dermatonomus) by benzene hexachloride dips, **328**; hexachlorcyclohexane preparations in sheep mange, **433**; toxicity of benzene hexachloride and isomers, **506**; effect of ingestion on poultry, **507**; absorption in poultry, **842**; toxicity, **1117** and **1799**; for control of arthropod parasites in S. Africa, **2608**; for control of Hypoderma bovis, **2609**; effect in a half-bath on hard ticks on cattle, **2617**; acaricidal properties, **2618**; treatment of "scaly leg", **2621**; toxicity to sheep and cattle, **2672**; relative efficiency in tick-dipping tanks, **2686**; use in Union of South Africa, **2764**; and D.D.T. for control of body strike in sheep, **2926**; in dips causing ear disease in sheep, **2983**; a test for assaying in dipping tanks, **3025**; rational use in animal husbandry, **3337**; for prevention of body strike, **3627**.
See also Mange, general, in dogs.
BENZOQUINOXONAL. See Anaplasma Infection.
p-BENZOQUINONE. See Influenza, virus.
BERI-BERI. See Vitamins, vitamin B_1.
BERMUDA. See Reports, Bermuda.
BETA-GLUCURONIDASE. Beta-glucuronidase of rabbit polymorphonuclear leucoytes, **1505**; beta-glucuronidase activity in pregnant rats, **1879**.
BETA-PELTATIN. See Neoplasms, treatment.
BETA RAYS. See Radioactive isotopes.
B.H.C. See Benzene Hexachloride.
BILE AND BILE PIGMENTS. See Liver, bile and bile pigments.
BILHARZIASIS. See Schistosoma Infection.
BILIRUBIN. See Blood, chemical composition; Liver, bile and bile pigments.
BIOCHEMISTRY. Of tuberculosis, **1586**; of vitamin function, **1770**; studies on T.B., **1924**; of lactation, **2386**; annual review of biochemistry, vol. xviii and xix, **2730-2731**; chemical composition of newly born mammals, **3030**; a new diagram for the visualization and interpretation of acid-base changes, **3031**.
See also Bacteria, general; Books, biochemistry; Enzymes; Heredity, general.
BIOGRAPHIES. See Books, miscellaneous.
BIOLOGY. Biological assays with special reference to biological standards, **2404**.
See also Books, biology.
BIOPSY. See Technique and Apparatus, collection of body fluids.
BIOTIN. Biotin coenzyme, **1829**.
See also Vitamins, vitamin B complex.
BIRDSVILLE DISEASE. See Poisons and Poisoning, plant poisoning.
BLACK DISEASE. See Clostridium Infection, in sheep.
BLACKHEAD. See Histomonas Meleagridis Infection [Blackhead].
BLACKLEG. See Clostridium Chauvoi Infection [Blackleg].
BLACKQUARTER. See Clostridium Chauvoi Infection [Blackleg].
BLACK WIDOW SPIDER. See Spiders.
BLASTOMYCES DERMATITIDIS. Studies on metabolism of Blastomyces dermatitidis, **1659**.
BLEPHAROBLAST. See Trypanosoma Brucei.
BLINDNESS. See Eyes, diseases.

BLOAT. See Tympanites.

BLOOD.

General. Collection of arterial blood, **268**; tuberculostatic activity of blood and urine from animals given gliotoxin, **413**; effect of ultrasonics on blood elements from leucaemic subjects, **557**; sex stimulation in mares by pregnant mares' whole blood, **588**; autoradiographs of blood cells, **610**; haematology in equine purpura haemorrhagica, **810**; proteolytic enzyme system of blood, **847**; freezing of whole blood, **891**; a simple halometer, **892**; haematology of the thoroughbred horse, **1163**; glucoproteins in horse blood, **1164**; liquoid for blood culture, **1212**; role of hypophyseal-hypothalamic system in the pathogenesis of erythraemia and polycythaemias, **1469**; atlas of the blood and bone marrow, **1572**; cytology of the blood, **1573**; blood studies in dairy cows, **1837**; single cell autographs of bone marrow and blood from rats using radioactive phosphorus, **2073**; studies on the haematology of barren mares, **2138**; chemical and morphological study of normal sheep blood, 2139; studies in dogs, **2140**; distribution of haemolysins in pathogenic and non-pathogenic staphylococci, **2221**; haemotological response to virus of equine infectious anaemia, **2278**; pH of whole arterial blood, **2390**; normal blood and urine values in mink, **2711**; blood picture of sheep exposed to stomach worms, **2943**; studies on free erythrocyte protoporphyrin, plasma copper and plasma iron in normal and pyridoxine-deficient swine, **2968**; haemotological studies on dogs with pneumonia and distemper, **2988**; influence of phenothiazine on blood picture in sheep, **3010**; comparison of blood constituents in identical and fraternal twin calves, **3043**; splanchnic removal of bacteria from blood stream of leucopenic rabbits, **3719**.

See also Anaemia, General; Babesia Infection, in cattle; Blood-Brain Barrier; Brucella Infection, general, immunology; 2,6-Diamino purine; Eperythrozoon Infection; Freeze-Drying; Heparin; Immunology, agglutination (haemagglutination).

Chemical Composition. Calcium, phosphorus and magnesium values in blood serum of domestic animals, **215**; calcium and phosphorus content in distemper, **381**; quantitative determination of bilirubin, **609**; influence of ambient temperature on blood composition in cows, **1165**; calcium content of maternal and foetal blood in cattle, **1839**; formation of choleglobin and role of catalase in the erythrocyte, **2134**; changes in blood chemistry after surgical operations, **2137**; study of normal sheep blood, **2139**; effect of adrenal hormones on blood phorpholipides, **3050**; normal blood sugar levels in Italy, **3347**.

See also Catalase; Cholesterol; Cupraemia; Fatty Acids; Lipaemia; Nutrition, general.

Coagulation. Penicillin and blood coagulation, **550**; staphylocoagulase in blood coagulation, **551**; coagulation defect of vitamin K deficiency compared with that of dicumarol, **803**; studies on blood coagulation, **853**; clot retraction, **1506**; blood clotting and allied problems, **2218**; action of thrombin in the clotting of fibrinogen, **3041**; time of coagulation of blood plasma in domestic animals, **3042**; book, **3121**.

See also Blood, prothrombin; Thrombin.

Corpuscles [red]. Duodenal glands and erythrocyte formation in swine, **553**; determination of blood volume using P^{32} labelled red cells, **608**; red blood picture of the horse, **851**; apparatus for counting red cells, **893**; agglutination of polysaccharide treated erythrocytes by tularaemia antisera, **969**; physiological variations in erythrocyte count, **1167**; passage of radioactive erythrocytes from peritoneal cavity into blood stream during experimental ascites, **1169**; factors influencing agglutinability of red cells, **1398**; direct measurement of erythrocytes, **1504**; red-cell content of blood in thoroughbred horses, **1836**; formation of choleglobin and role of catalase, **2134**; microspectrophotometric study of red cell nuclei during pyknosis, **2358**; recovery of human erythrocytes after freezing, **2391**; inherited factor for erythrocyte type in the horse, **2707**; acquisition of the J-substance by the bovine erythrocyte, **2709**; influence of intravenous calcium upon volume, **2710**; erythrocyte destruction in tuberculous animals following tuberculin injection, **2827**; action of tubercle bacilli and M. johnei on colour, **3148**; erythrocyte survival studies in childhood, **3716**; determination of circulating red cell volume by radioactive chromium, **3717**; in-vivo survival of rabbit's red cells recovered after freezing, **3761**.

See also Erysipelothrix (Listeria) Monocytogenes Infection; Hepatitis, infective in man; Immunology, agglutination, (haemagglutination); Mycobacteria, General; Newcastle Disease, immunology; Plasmodium Lophurae; Proteins.

Corpuscles [white]. Eosinophile response to intravenous epinephrine or histamine in anaesthetized dogs, **218**; transfusion of leucocytes labelled with radioactive phosphorus, **219**; are basophilic leucocytes "heparinocytes", **852**; role of leucocytes and platelets in anaphylactic and peptone shock, **1482**; beta-glucuronidase of rabbit polymorphonuclear leucocytes, **1505**; effect of intravenous injecion of tuberculin on leucocytes of normal and infected rabbits, **1589**; collection of leucocytes from circulating blood, **1882**; salicylate, gentisate and circulating eosinophils, **3044**.

See also Leukergy.

Diseases. Radioactive phosphorus in polycythaemia and myeloid leucaemia, **193**; sex-linked haemophilia in dogs, **249**; skeletal changes associated with diseases of the blood, **1507**; lipaemia after cortisone administration, **1818**; haemorrhagic disorders, **2212**; protective effect of cysteine on nitrogen mustard induced leucopenia, **2367**; feline infectious agranulocytosis, **2591**; high altitude causing polycythaemia (eryhrocytosis) in lambs, **2659**; book, **3121**; hyperlipaemia in rabbits, caused by intravenous surface-active agents, **3692**.

See also Anaemia, General; Circulatory System, diseases; Cupraemia; Haemoglobinuria; Haemolytic Diseases; Urinary System, diseases.

Groups. Rh factor, **1399**; inherited factor for erythrocyte type in the horse, **2707**; blood group combinations in monozygous cattle twins and acquisition of the J substance by the bovine erythrocyte, **2709**; in cattle, **3346**; and artificial insemination, **3371**.

Haemoglobin. Significance in nematodes, **121**; Ascaris haemoglobin as indicator of oxygen, **447**; foetal haemoglobin in human beings, **549**; haemoglobins of Ascaris lumbricoides, **555**; normal haemoglobin content in Philippine mares, **2706**; haemoglobin estimation in the laboratory, **2757**.

Haptoglobin. Haptoglobin in cattle blood, **217**.

Methaemoglobin. Well-water methaemoglobinaemia in infants, **1796**.

Plasma. Neutralization of vaccinia virus by gamma globulin, **1007**; plasma antimony concentration after antimony compound treatment, **1126**; absence of respiratory change or manifest tetany with high plasma pH produced by bicarbonate in dogs, **1158**; plasmacytosis of the bovine udder during lactation, **1832**; plasma iron and saturation of plasma iron-binding protein in dogs, **2080**; measuring of plasma volume using a dye T-1824, **2392**; effect of cortisone on plasma cells in hyperimmunized rabbits, **3020**; time of coagulation, **3042**.

See also Blood, general; Prothrombin; Mycobacterium Tuberculin, cultivation; Nutrition, in cattle; Vitamins, vitamin C.

Platelets. Platelet count in rabbits, **607**; role of leucocytes and platelets in anaphylactic and peptone shock, **1482**.

Pressure. Intra arterial blood pressure during exercise, **1168**; in relation to intrarenal pressure, **2149**; apparatus for measuring, **2193**; effect of vitamin B complex deficiency (except thiamine), in rats, **2339**; direct measurement in cattle using electromanometer, **3718**; factors regulating, **3779**.

Prothrombin. Lipoid thromboplastins, **552**; effect of thrombokinase on plasma coagulation, **2712**; treatment of dicumarol-induced hypoprothrombinaemia in dogs with vitamin K_1, **3295**; prothrombin consumption during clotting of normal blood, **3344**.

See also Thrombin.

Sedimentation. Sedimentation rate in Egyptian buffaloes, **1166**; blood sedimentation test and calcium therapy, **3018**.

Serum. Variations in serum proteins in cattle, **216**; serum globulins and immunity, **1029**; experimental control of serum calcium levels in vivo, **1074**; serum levels of streptomycin in horses and sheep, **1133**; binding of blood serum gamma globulin by sulphadiazine, **1487**; assessment of euglobulin content, **1884**; action of the anterior pituitary adrenal cortex and spleen on the fibrinolysin-antifibrinolysin system in serum, **2393**; serum level response of horses to aqueous solutions of penicillin, **2683**; calcium and potassium content, **3026-3027**; horse-serum causing glomerulonephritis in rabbits, **3696**.

See also Blood, transfusion; Hyaluronidase; Immunology, serology; Lipase; Phosphatase; Sex Hormones, gonadotrophins; Vitamins, vitamin E.

Transfusion. In cattle, **201**; rate of blood flow through needles under pressure, **202**; in dogs, **203** and **204**; following transfusions of incompatible blood, **417**; technique of exchange transfusion in new-born foals, **419**; in animals, **514**; and sulphamethazine in bovine brucellosis, **963**; identification of blood donors with fluorescent dye, **1561**; Brucella studies in bank blood, **1637**; eliminating haemagglutination in heterogenous blood transfusions and in heterologous serum, **3009**.

See also Blood, corpuscles (white); Brucella Infection, treatment and control.

Volume. Anal intravenous therapy, **516**; determination, **608**; concurrent estimates in animals by bleeding and dye methods, **3103**.

See also Blood, corpuscles (red).

BLOOD-BRAIN BARRIER. Potassium and calcium content of cerebrospinal fluid and blood serum, **3026-3027**; attempts to influence the passage of subtances into the

BLOOD-BRAIN BARRIER—[cont'd.]
brain, 3028; blood-brain barrier in the horse and NaCl content of serum and cerebrospinal fluid, 3345.
BLOODWORMS. See Strongyles.
BLOWFLIES AND FLESHFLIES. D.D.T. for protection of sheep against blowfly strike, 424; epicuticle of blow-fly larvae, 2050; connective tissue strands in blow-fly larvae, 2051; D.D.T. and B.H.C. for control of body strike in sheep, 2926; tests with insecticides for protection against body strike, 3261; report, Australia, 3412; competition for food and allied phenomena in sheep-blowfly populations, 3626; D.D.T. and B.H.C. for body strike prevention, 3627.
See also Calliphora; Chrysomyia; Lucilia; Wohlfahrtia.
BLUETONGUE. Report, Cyprus, 900; report, Cyprus, 1231; transmission by Culicoides, 2608; report, Cyprus, 2781; a new virus disease of sheep resembling bluetongue in Turkey, 3226; in Turkey, 3227; report, Cyprus, 3766.
BODY STRIKE. See Blowflies and Fleshflies.
"BOG CROOK." Report, Eire, 3769.
BOLIVIA. See Trypanosoma Cruzi Infection (Chagas' disease).
BONE MARROW. Collection from iliac crest, 266; atlas of the bone marrow and blood, 1572; comparison of sternal and spinous process marrow, 1824; single cell autographs of bone marrow and blood from rats using radioactive phosphorus, 2073; biopsy in normal sheep, 2191.
See also 2,6-Diaminopurine.
BONES.
General. Collection of marrow from iliac crest, 266; rapid bone-sectioning technique, 614; bones, muscles and vitamin C, 807; skeletal changes associated with diseases of the blood, 1507; radiographical studies on ossification of leg bones in horses, 2144; studies on the effect of radioactive colloidal gold on the development of oral structures in mice, 2363; genetical research on the number of vertebrae in the pig, 2721; X-ray diffraction studies on bone tissue during hyperparathyroidism, 2994; local action of calciferol and oestradiol, 3710.
See also Heredity; Teratology; Vitamins, vitamin A.
Diseases. Parathyroid glands and metabolic bone disease, 496; fracture of the epiphysis of the femur in horses, 811; treatment of fractures in large animals, 1485; osteomalacia and animal insurance, 1764; "bent leg" in lambs, 1781; pulmonary hypertrophic osteo-arthropathy (Marie's disease) in a dog, 1782; hereditary osteopetrosis in rabbits, 2171 and 3384; osteopetrosis and dental changes in a pony, 2654; factors influencing formation of cartilage in healing of experimental fractures, 3695.
See also Arthritis; Jaws; Rickets; Teratology.
Fractures. See Bones, diseases.
Growth. Role of potassium in growth and bone formation, 799; calcium and phosphorus for bone formation, 1436; role of alkaline phosphatase in osteogenesis, 3713.
See also Hormones.
BOOKS.
Anatomy. Bovine anatomy dissection guide, 628; dissection guide for students, 629; atlas of rhomencephalon of the rabbit, 630; dictionary of anatomical terms, 2465; outline of physiology and anatomy for owners of livestock, 2727; pathological anatomy, 2793; guide to the anatomy of domestic animals, 2798; practical anatomy of the rabbit, 3360.
Bacteriology. Bovine TB., 277; brucellosis, 278; report on leptospirosis in Palestine, 279; public health, bacteriology and parasitology, 288; medical bacteriology, 903; symposium, nature of the bacterial surface, 1240; handbook for medical students and practitioners, 1894; textbooks, 2206 and 2207; introduction to bacteria, 2208; bacterial toxins, 2787; bacteriological diagnosis of mycobacteria, 3431; chemical activities of bacteria, 3776.
Biochemistry. Biochemistry and medicine, 627; chemical constitution and biological activity, 1245; biological actions of adenine nucleotides, 2216; biochemistry of the B vitamins, 3436; biochemistry of nucleic acids, 3781.
Biology. Introduction to medical biology, 283; biological standardization, 907; history of biology, 1241; chemical constitution and biological activity, 1245; Spanish-English glossary of animal biology, 1558; annual review of microbiology, 1569.
Botany. Medical botany, 2796.
Chemistry. Dictionary of chemistry, 285; chemistry and physiology of growth, 286; chemical constitution and biological activity, 1245; physiology, chemistry and application of hormones, 2219; chemical activities of fungi, 2464.
Diseases, General. Infectious diseases of animals, 904; sheep management and diseases, 1242; leptospiroses, 1570; mortality in young pigs, 1571; Manson's tropical diseases, 1895; diseases of sheep in Australia, 2211; haemorrhagic disorders, 2212; blood clotting and allied problems, 2218; technique for laboratory diagnosis and control of communicable diseases, 2791; pathological physiology and mechanism of disease, 2792; diseases of the hoof, 2794; animal diseases communicable to man, 3113; poultry diseases, 3114; blood clotting and allied problems, 3121; diseases of pigs, 3433; clinical diagnosis of internal diseases of domestic animals, 3434.
Endocrinology. Hormones of the pituitary genital and adrenal glands, 1899; hormones, physiology, chemistry and applications, 2219; adrenal cortex, 3122; textbook, 3780.
Fungi. Chemical activities of fungi, 2464; mycology, yeasts and moulds, 2524; physiology of fungi, 2788.
Immunology. Microbiology and immunology, 624; guide to allergy, 1896.
Medicine. Biochemistry in relation to medicine, 627; methods in medical research, 632; introduction to the study of experimental medicine, 2726; normal values in clinical medicine, 2799; radioactive isotopes in medicine and biology, 3119.
Microscopy. Fluorescence microscopy in microbiology, 2753.
Miscellaneous. Excerpts from medical and veterinary journals, 289; animal encyclopaedia, 290; German-English medical dictionary, parts I and II, 292 and 1904; pregnancy diagnosis, 631; teratology, 882; Spanish-English glossary of biology, 1558; animal behaviour, 1574; a guide for authors, 1576; evaluation of bull semen and artificial insemination, 1900; genetics and animal improvement as illustrated by the inheritance of egg production, 1901 and 3123; wild animals in captivity, 1902; latin for medical students, 1903; genetics of the sheep, 2220; directions for the post-mortem examination of animal tissues, 2466; diseases of the cellular lipid metabolism, 2789; heredity of predisposition to disease, 2795; breeding for production, 2800; care and breeding of laboratory animals, 2801; handling of animals and first aid, 2802; food, farming and future, 2804; fertility farming, 2805; agricultural science in the Sudan, 2806; medical abbreviations in English, German, French, Italian, Spanish and Swedish, 2807; Louis Pasteur, free lance of science, 3111; stress and general adaptation syndrome, 3115; zootechny, 3124; English husbandry from the earliest times to the present day, 3125; colour and markings of horses, 3126; tissue culture technique, 3127; laboratory technique, 3128; farriery, 3131; I.C.I., film catalogue, 3409; clinical-chemical examination guide, 3439; the rabbit, 3758; a synopsis of anaesthesia, 3778.
Neoplasms. Cytologic diagnosis of cancer, 625; problem of cancer, 3112.
Nutrition. Biochemical principles of animal nutrition, 282; animal nutrition, 1897; elements of animal nutrition, 2210; biochemistry of B vitamins, 3436.
Obstetrics. Practical obstetrics and veterinary gynaecology, 2750.
Parasitology. Public health, bacteriology and parasitology, 288; animal parasites and reactions of their hosts, 906; natural history of mosquitoes, 1575; protozoology and entomology, 2209.
Pathology. Clinical pathology, 280; histopathology of the skin, 281; pathological physiology, 2792; pathological anatomy, 2793.
Pharmacology. Practical veterinary pharmacology, 284; British Pharmaceutical Codex, 1243; the sulphonamides, 1244; chemical constitution and biological activity, 1245; acridines, 1898; synopsis of British pharmacopoeia, 2213; Bennett's materia medica and pharmacy for medical students, 2214; isotopic tracers and nuclear radiations with applications to biology and medicine, 2215; physiology, chemistry and application of hormones, 2219; chemists and druggists poisons guide, 3777; a synopsis of anaesthesia, 3778.
Physiology. Chemistry and physiology of growth, 286; history of physiology, 287; physiology of heat regulation, 908; atlas of the blood and bone marrow, 1572; cytology of the blood, 1573; physiology, chemistry and application of hormones, 2219; outline of physiology and anatomy for owners of livestock, 2727; pathological physiology, 2792; comparative animal physiology, 3120; physiology of the nervous system, 3722; factors regulating blood pressure, 3779.
Public Health. Public health, bacteriology and parasitology, 288; guide to trichinella inspection, 291; dairy science and milk hygiene, 3129; inspection of food stuffs of animal origin, 3130; milk production and control, 3437; meat inspection law, 3438.
Surgery. A manual of horse medicine and surgery, 1246; fundamentals of general surgery and surgical technique, 2759; veterinary surgery, 3117; special veterinary surgery, 3435.
Veterinary Medicine. Diagnostic methods in veterinary medicine, 905; a manual of horse medicine and surgery, 1246; physiotherapy in veterinary medicine, 2217; symptomatology and veterinary diagnosis, 2790; farm hygiene and veterinary medicine, 2803; veterinary clinical

BOOKS—Veterinary Medicine—[cont'd.]
medicine, 3116; index of treatment in small animal practice, 3118; clinical diagnosis, 3434.
Zoology. Life of vertebrates, 2797; index-catalogue of medical and veterinary zoology, 3432.
BOOPHILUS. See Ticks, control; Reports, Australia.
BORNA DISEASE. See Encephalomyelitis, Equine, Borna disease.
BORRELIA. A review on spirochaetes, 2532.
BOSICOLA. Report, Australia, 3412.
BOTANY. Nomenclature and taxonomy, 2251.
See also Books.
BOTRIOMYCOSIS. Report, Norway, 3771.
BOTULISM. See Clostridium Botulinum Intoxication [Botulism].
BOWEL OEDEMA OF PIGS. See Oedema Disease of Swine.
BRABANT DISEASE. See Poisons and Poisoning, organic poisoning.
BRACKEN. Bracken diet causing vitamin B, deficiency in rats, 187; experiments with dried bracken (Pteris aquilina), 1123; biological activity of vitamin B modified by action of a substance from bracken leaves, 1450; inactivation of thiamine by, 1451; poisoning by, 1452; the anti-aneurin activity of, 1453; in U.S.A., 2462; poisoning, 2676; poisoning in S. Rhodesia, 2999; treatment in cattle, 3000; experimental "poisoning" in sheep, 3700.
BRADSOT. See Clostridium Infection, in sheep.
BRADYBAENA. See Snails.
BRADYCARDIA. See Circulatory System, diseases.
BRAIN. See Nervous System, brain.
BRAXY. See Clostridium Infection, sheep.
BRAZIL. See Copper; Diarrhoea, in calves; Helminth Parasites; Leptospira Infection, in man from animals; Parasitic Infestation, General; Sterility, in cattle; Teeth; Zootechny.
BREEDING. See Reproduction; Zootechny.
BRISKET ABSCESS. In Australia, 3412.
BRITISH GUIANA. See Reports, British Guiana.
BRITISH HONDURAS. See Reports, British Honduras.
"BROKEN WIND." See Emphysema.
BRONCHITIS, INFECTIOUS, IN FOWLS. Isolation of virus of infectious bronchitis and Newcastle disease, 390; in U.S.A., 901; injection of virus into chick embryos, 1020; in U.S.A., 2204, 3426 and 3773; report, Denmark, 2459.
BRONCHITIS, VERMINOUS. See Respiratory System, diseases.
BRONCHO-PNEUMONIA, ENZOOTIC.
In piglets. Aetiology and control, 3231.
In sheep. See Lymphadenitis, Caseous.
"BROWN FAT." See Hibernation.
BRUCELLA ABORTUS. Isolation from pigs, 32; isolation from apparently healthy human beings, 663; action of streptomycin and aureomycin in vitro, 964; effect of ionic Mn and Mg on, 971; purification of the bovine gamma globulin factor which suppresses variation, 1632; action on amino acids, 1658; effect of metabolites upon growth and variation, 1947; inhibition by medium filtered through cotton, 2245; genetic aspects of added carbon dioxide requirements, 2246; isolation from goats' milk, 2515; toxic effect of buffered saline on viability, 2852; isolation from sheep, 3172.
See also Brucella Infection.
BRUCELLA GROUP.
General. Physiology of Brucella organisms, 40; variation in the genus, 671; Brucella fractionation, 1285; nutrition of Brucella organisms, 1286; use of chick embryo for isolation, 1634; Brucella studies in bank blood, 1637; cultivation on chemically deficient media, 1639; toxicity of peptone, 1657.
BRUCELLA INFECTION.
General. Brucella suis infection in male g. pigs, 34; undulant fever in man and cattle, 35; book, brucellosis, 278; in buffaloes, 656; in camels, 657; in Canada, 661; estimation of viable Brucella organisms in blood, 960; protective effect of cattle sera on whole mice infected with Br. abortus, 967; a survey in South Africa, 1944; allergy, 1949; streptomycin in experimental brucellosis of g. pigs, 2516; testing of milk for TB. and brucellosis, 3056.
See also Brucella Abortus; Kidneys, diseases.
In Cattle. Undulant fever, in man and cattle, 35; in Union of South Africa, 275, 276 and 899; in buffaloes, 656; in Sweden, 902; spread by artificial insemination, 957; in Puerto Rico, 958; report, National Institute for Dairy Research, Reading, 1228; reports, Trinidad and Tobago, 1232-1234; reports, Fiji, 1235 and 1236; report, Nigeria, 1237; report, Bechuanaland Protectorate, 1239; New York State calfhood vaccination plan, 1631; control in cattle, 1943; reproduction in a dairy herd and its relation to vaccination, 1946; report, Canada, 2197; report, California, 2203; report, Yugoslavia, 2205; report, Netherlands, 2458; report, Denmark, 2459; reports, U.S.A., 2401-2462 and 2784; economic losses in Poland, 2511; in Turkey, 2512; in dairy cattle in Singapore, 2844; in Turkey, 2845; in Belgium, 2856; reports, Australia, 3412 and 3413; report, Eire, 3769; reports, Norway, 3770-3771; report, Sweden, 3772.
See also Brucella Infection, immunology; Buffaloes; Brucella Infection, immunology.
Diagnosis. See Brucella Infection, immunology.
In Fowls. Nature of brucellosis in chickens, 1948; experimental infection of guinea fowl, 2849.
In Goats. Immunization of goats, 667; abortion in goats and isolation of Br. abortus from goats' milk, 2515; epidemiology in sheep and goats, 2521; epidemiological considerations, 3495.
In Horses. In the U.S.S.R., 959.
Immunology. Agglutination tests in cattle, grouped according to age, 37; standardization of antigens used in diagnosis, 38; a water-soluble, heat-stable Brucella allergen, 39; vaccination, 43; field trials with M vaccine, 44; ring test of milk, 319; inoculation of g. pigs with Strain 19, 322; Strain 19 immunization in cattle, 662; immunization of goats, 667; immunological study, 670; passage of antibodies from maternal circulation into the embryo in rabbits, 1027; virulence tests of Br. abortus vaccines, 1281; stability of Strains 19 and 45/20 in lactating and pregnant cows, 1282; Brucella fractionation, 1285; New York State calfhood vaccination plan, 1631; identification of Br. abortus Strain 19 by dye bacteriostasis, 1638; ring test antigen prepared by reduction of tetrazolium salt, 1945; reproduction in a dairy herd and its relation to vaccination, 1946; allergy in brucellosis, 1949; V. fetus in aborted material from cows inoculated with Strain 19 Br. abortus vaccine, 1951; sources of error in brucellosis agglutination, 2243; opsonic indexes of cattle after Brucella abortus bacteria, 2244; ring test, 2510 and 2847; differentiation of cattle with Br. abortus infection and cattle vaccinated with Strain 19, 2513; diagnosis by serological and allergic methods, 2514; serological research in man and animals in Turkey, 2517; agglutinins in the blood of dogs in Eritrea, 2520; a new antigen, 2848; Strain 19, 2850-2851; vaccination of pregnant cattle with Strain 19, 3169; a freeze-dried Strain 19 vaccine, 3170; accidents with Strain 19, 3171; standardization of agglutination reaction, 3488; occurrence of agglutinins in the blood of wild deer, 3489; significance of agglutinins in genital organs of infected cows, 3490; value of ring test, 3491; antigenic relationship of Br. suis and Proteus in swine, 3493.
In Man. Undulant fever, 35; in the U.K., 36; an occupational disease, 318; Br. abortus isolated from apparently healthy human beings, 663; estimation of viable organisms in blood, 960; neurological complications of undulant fever, 1950; in Turkey, 2517; in veterinarians in Czechoslovakia, 2518; treatment with sulphonamides and blood transfusion, 3173.
In Sheep. Epidemiology in sheep and goats, 2521.
See also Brucella Abortus.
In Swine. Brucella abortus infection, 32; Brucella suis infection, 33; recovery of Br. melitensis from a pig, 970; failure of aureomycin in treatment of Br. suis infection, 1283; in Germany, 3492.
See also Brucella Infection, immunology, treatment and control.
Treatment and Control. Streptomycin and sulphadiazine treatment in g. pigs, 41; control using separate parturition pens, 52; chloramphenicol treatment, 320; aureomycin treatment, 321; chemotherapy in g. pigs, 323; in Czechoslovakia, 658; in the U.S.A., 659 and 660; treatment of human beings with streptomycin and sulphonamide, 668; treatment of human beings with chloramphenicol and aureomycin, 669; control by segregation in the U.S.S.R., 961; control in Oregon, 962; sulphamethazine and blood transfusion in bovine brucellosis, 963; action of streptomycin and aureomycin on Brucella in vitro, 964; aureomycin in acute brucellosis, 965; aureomycin and other chemotherapeutics in experimental brucellosis, 966; failure of aureomycin in Br. suis infection, 1283; report, Canada, 1564; New York State calfhood vaccination, 1631; new method of treatment, 1635; control in cattle, 1943; streptomycin treatment of experimental infection in g. pigs, 2516; with aureomycin, 2519; control in Finland, 3168; in man, with sulphonamides and blood transfusion, 3173; experimental treatment in swine with streptomycin and sulphadiazine, 3494.
See also Brucella Infection, immunology.
BRUCELLA MELITENSIS. From pigs, 970; antibiotics in Br. melitensis infection in mice, 1636.
See also Brucella Infection, in man.
BRUCELLA SUIS. Urease test for differentiation, 664; failure of aureomycin in treatment, 1283; isolation from human sputum, 1633.
See also Brucella Infection, general; Brucella Infection, in swine.

BRUCELLA TULARENSIS INFECTION [TULARAEMIA]. In U.S.S.R., 665; in man in Belgium, 666; in hares and rabbits in France, 968; agglutination of polysaccharide-treated erythrocytes by tularaemia antisera, 969; persistance of agglutinins in serum of naturally infected sheep, 1272; typhoid-like form in man in Russia, 1284; quantitative antibody response of man to infection or vaccination, 1396; susceptibility of buffaloes, 2522; epidemic in Turkey, 2523; a professional disease, 3174; report, Canada, 3411.
BUFFALO FLY. See Siphona.
BUFFALOES. Fatty acids of buffalo colostrum fat, 548; brucellosis in, 650; blood sedimentation rate, 1166; economic importance in the Belgian Congo, 1205; anatomical research on Indo-Chinese buffaloes, 1522; Clostridium infection in India, 1953; susceptibility to tularaemia, 2522; S. dublin infection, 2841; anatomy of the tongue, 3054; a study, 3339.
See also Genital System, semen and spermatozoa; Pox Diseases, vaccinia.
BUFO MELANOSTICTUS. See Pregnancy, diagnosis.
BUGS. See Cimex; Triatoma.
BULGARIA. See Babesia Infection [Piroplasmosis], in cattle.
"BULLDOG" CALVES. See Teratology.
BUNOSTOMUM. Oesophagostomum radiatium and B. phlebotomum, in cattle, 1414; infection experiments with B. phlebotomum in the calf, 1415; parasitic gastroenteritis in sheep, 2062; effect of feeding small amounts of phenothiazine on pure infections of B. phlebotomum, 2944; report, Australia, 3412.
BURNS. See Pseudomonas.
BUTTER. See Milk and Milk Products, bacterial content.
N-BUTYL-ACETANILIDE. See Ticks, control; Trombicula.
BUTYRATE. See Digestive System, rumen.

C

CACAO BEANS. See Poisons and Poisoning, plants.
CAECUM. See Digestive System, caecum.
CAESARIAN SECTION. In sows, 265.
CALCIFEROL. Intramuscular injection, 528; local action on bone, 3710.
CALCIUM. Calcium, phosphorus and magnesium values in cattle, horse, sheep and pig serum in Ireland, 215; content of blood in distemper, 381; experimental control of serum calcium levels in vivo, 1074; calcium and phosphorus for bone formation, 1436; ovarian hormones and calcium metabolism, 1437; secretion of radio-calcium in milk, 1502; content of maternal and foetal blood in cattle, 1839; influence of abnormal feeding on metabolism in cattle, 2079; activating effect on a bactericidal substance for B. subtilis in human serum, 2121; influence of intravenous injection on the erythrocyte volume, 2710; influence on isolated mammary gland, 2717; blood sedimentation test and calcium therapy, 3018; blood-brain barrier in the horse, calcium content of cerebrospinal fluid and the blood serum, 3026.
See also Cation-Exchange Resin; Metabolism; Milk Fever.
CALCIUM PHOSPHATE. See Nutrition, general.
CALCULI. See Urinary System, diseases.
CALF DIPHTHERIA. See Fusiformis Necrophorus Infection, in calves.
CALLIPHORA. Role of the brain in the metamorphosis of C. erythrocephala, 2925.
CALVES. See Animal Protein Factor; Ascaris Vitulorum; Aujeszky's Disease; Brucella Infection, in cattle; Cattle; Digestive System, general; ruminant digestion; Fasciola; Fusiformis Necrophorus Infection; Leptospira Infection, in cattle; Nutrition, cattle; Pasteurella Infection, in cattle; Skin, diseases; Streptococcus Infection, in cattle; Vitamins, vitamin B complex; Youngstock Diseases; Zootechny.
CAMELS. Toxicity of Perralderia coronopifolia, 511; brucellosis, 657; phenothiazine treatment in haemonchosis and trichostrongylosis, 2311; specificity of camel antiserum, 2604; myocarditis, 2658; parasites in the Sudan, 3625; Dipetalonema evansi microfilaria, 3648.
CANADA. See Brucella Infection, general; Erysipelothrix (Listeria) Monocytogenes Infection; Moniezia; Poisons and Poisoning; Reports, Canada; Trichinella Infection.
CANARIES. See Erysipelothrix (Listeria) Monocytogenes Infection.
CANCER. See Neoplasms.
CANDIDA. Antibiotics in the spread of fungous diseases, 3180; yeasts of the genus Candida from mastitis udders after penicillin infusion, 3499.
See also Fungi.
CANICOLA FEVER. See Leptospira Infection, in man from animals.
CANNIBALISM. Prolapse and "pickout' in diethylstilboestrol-treated cockerels, 1140; report, U.S.A., 2786.
CAPILLARIES. See Circulatory System, capillaries.
CAPONIZATION. Ducks, 271; toxicity of flesh from stilboestrol-castrated capons, 590; prolapse and "pickout" in diethylstilboestrol-treated cockerels, 1140; with oestrogens, 3751.
CAPREOLUS CAPREOLUS. See Deer.
CARBOHYDRATES. Carbohydrate histochemistry studied by acetylation techniques, 850; effect of adrenal cortical steroids upon formation of carbohydrate by rat liver slices, 2704.
See also Digestive System, ruminant digestion; Metabolism; Nutrition.
CARBON DIOXIDE. Temperature, oxygen and carbon dioxide in chicken boxes at various room temperatures, 1549; genetic aspects of added carbon dioxide requirements of Br. abortus, 2246.
CARBON TETRACHLORIDE. Treatment of coccidiosis in fowls and turkeys, 64; toxicity for sheep, 505; effect of cortisone on carbon tetrachloride induced liver fibrosis in rats, 1498; comparison of fatal tocopherol deficiency and carbon tetrachloride poisoning in rats, 2337; chemical alterations in mouse liver following single feeding, 2359; effect of vitamin B_{12} on carbon tetrachloride-produced hepatic injury, 2370; poisoning in sheep, 2673.
CARCASS DISPOSAL. Methods, 574.
CARCINOGENIC SUBSTANCES. See Neoplasms, causation.
CARCINOMA. See Neoplasms.
CARDIOSCLEROSIS. See Circulatory System, diseases.
CARICA PAPAYA. See Technique and Apparatus, media.
CARICIDE. In the treatment of strongyloidiasis in dogs, 2065; for treatment of spirocercosis, 2067; an anthelmintic for cats and dogs, 3636.
CARIES. See Teeth.
CARONAMIDE. Effect on P.A.S. plasma concentrations, 834.
CAROTENE. See Vitamins, vitamin A.
CARTILAGES. See Bones.
CASEIN. Influence on roughage digestion, 145; acid hydrolized casein diet for rats, producing tryptophan deficiency, 146.
See also Thyroid Gland, iodinated proteins.
CASTOR BEANS. Poisons and Poisoning, plant poisoning.
CASTOR OIL. Allergic conditions due to castor oil in industry, 1477.
CASTRATION. Ovary-spleen transplantation in rats and effect of castration and pregnancy, 467; bloodless castration and tailing of lambs, 3393.
See also Caponization; Clover, Subterranean; Zootechny.
CASTRIX. See Vermin Control.
CATALASE. Decrease of hatchability and catalase content in stored eggs, 859; blood catalase in cattle experimentally infected with F. & M. disease, 1004; formation of choleglobin and role of catalase in the erythrocyte, 2134; blood catalase in cattle experimentally infected with F. & M. disease, 2567.
CATARRH, MALIGNANT BOVINE. Treatment with intramuscularly injected vitamin B_1, 82; acid-fast inclusion bodies in nerve cells in infected animals, 1691; experimental transmission and inclusion bodies in the central nervous system, 2282; report, Norway, 3770.
CATECHIN. Inhibition of anaphylaxis in g. pigs, 2924.
CATHAICA. See Snails.
CATHEPSIN. See Neoplasms.
CATION-EXCHANGE RESIN. Zeo-Karb 225, its exchange efficiency towards sodium, potassium and calcium ions, 2405.
CATS. See Aelurostrongylus; Anatomy; Ascarids; Aujeszky's Disease; Babesia Infection (Piroplasmosis), general; Caricide; Eyes, diseases; Leucopenia; Mange, in cats; Mycobacterium Tuberculosis Infection, in cats; Nervous System, general; brain; medulla; Pneumonitis, Feline; Salmonella Infection, in cats; Salmonella Pullorum Infection; Teeth.
CATTLE.
General. Weight losses during transit, 575; inherited non-lethal anatomical characters in cattle, 879; Santa Gertrudis beef cattle breed of Texas, 1204.
See also Abortion; Anaesthesia and Analgesia, Anatomy; Animal Protein Factor; Behaviour of Animals; Blood; Books, anatomy; Buffaloes; Climate; Dehorning; Diaminodiphenyl Sulphone; Digestive System, ruminant digestion; Fertility; Fluid, Cerebrospinal; Genital System; Hair; Hormones; Insemination, Artificial; Metabolism; Multiple Births; Physiology; Pregnancy diagnosis; Skin; Technique and Apparatus, zootechnical; Temperature, body, environmental; Thyroid Gland; Urinary System; Zebu; Zootechny.
Arthropod Parasites. Myiasis of the hoof in cattle in North Celebes, 1725.
See also Glossina; Insecticides; Lice; Mites; Ticks.
Bacterial Diseases. See Brucella Infection, in cattle; Clostridium Botulinum Intoxication (Botulism); Clostridium Infection, in cattle; Fusiformis Necrophorus Infection; Leptospira Infection, in cattle; Mastitis, Bovine; Mycobacterium Johnei Infection, [Johne's Disease]; Mycobacterium Tuberculosis Infection; Pasteurella Infection, in cattle; Pleuro-Pneu-

CATTLE—Bacterial Diseases—[cont'd.]
monia, Bovine Contagious; Proteus; Salmonella Infection, in cattle; Staphylococcus Pyogenes; Streptococcus Infection; Vibrio Fetus Infection.
Diseases, General. Cattle health and soil, **1529.**
See also Diabetes; Diseases, General; Eyes, diseases; Haemoglobinuria; Haemaphroditism; Keratitis, Infection, in cattle; Ketosis; Leucosis; Milk Fever; Neoplasms, general; Panting; Periarteritis Nodosa; Sterility; Teratology.
Fungous Diseases. See Actinomyces Infection; Aspergillus; Candida; Histoplasma Infection, in cattle; Ustilago.
Helminth Parasites. See Ascaris Vitulorum; Bunostomum; Cysticercus; Digestive System, diseases; Fasciola; Filariae; Haemonchus; Helminth Parasites; Lungworms; Oesophagostomum; Onchocerca; Paramphistomum; Rhabditis; Schistosoma Infection; Strongyles.
Nutrition and Nutritional Diseases. See Nutrition, cattle; Calcium; Choline; Copper.
Physiology. See Lactation; Reproduction.
Poisoning. See Bracken; Lead; Poisons and Poisoning.
Protozoan Diseases. See Anaplasma Infection; Babesia Infection [Piroplasmosis], in cattle; Theileria Infection; Trichomonas Infection; Trypanosoma Infection.
Rickettsial Diseases. See Eyes, diseases.
Virus Diseases. See Aujeszky's Disease; Catarrh, Bovine Malignant; Encephalitis, Japanese B; Foot and Mouth Disease; Influenza, in cattle; Pox Diseases, cow pox; Rinderpest; Stomatitis, Vesicular.
CATTLE PLAGUE. See Rinderpest.
CELLULOSE. See Digestive System, ruminant digestion.
"CEMENT" DISEASE. See Broncho-Pneumonia, in piglets.
CENTRIFUGATION. See Technique and Apparatus, immunological.
CEPHALOPSIS. Cephalopsis titillator in camels, **3625.**
CERCARIAE. See Schistosoma Infection.
CEREBROSPINAL FLUID. See Nervous System, cerebrospinal fluid.
CESTODES. "Anthelin" against tapeworms in dogs, **764**; action of areca nut and Filix mas extracts on Dipylidium caninum, Hymenolepis nana, T. saginata, T. solium and taeniaeformis, **2626.**
See also Cysticercus; Diphyllobothrium; Echinococcus; Moniezia; Sparganum.
CETRIMIDE. See Cetyl Trimethyl Ammonium Bromide (C.T.A.B.).
CETYL TRIMETHYL AMMONIUM BROMIDE (C.T.A.B.). Skin sensitivity to cetrimide (C.T.A.B.), **1125.**
CEYLON. See Reports, Ceylon.
CHABERTIA. Parasitic gastro-enteritis in sheep, **2062**; in sheep in Italy, **2937.**
CHAETOPHRACTUS VILLOSUS. See Armadillo.
CHAGAS' DISEASE. See Trypanosoma Cruzi Infection (Chagas' Disease).
CHEESE. See Milk and Milk Products, bacterial content.
CHEILOSPIRURA. See Acuaria.
CHENOPODIUM. See Anthelmintics, for swine.
CHERONIA TRANSVAALENSIS. See Poisons and Poisoning, plant poisoning.
CHICK EMBRYOS. See Embryos, Fowl.
CHICKEN MITES. See Mites.
CHILE. See Trypanosoma Cruzi Infection (Chagas' disease).
CHIMPANZEES. See Poliomyelitis.
CHINA. See Eyes, diseases; Leishmania Infection; Schistosoma Infection.
CHINCHILLAS. Diseases, **166**; gastroenteritis, **493.**
CHLORAL HYDRATE. See Anaesthesia.
CHLORAMINE. See Disinfectants, Antiseptics and Sterilization.
CHLORAMPHENICOL. In acute brucellosis, **320**; in chronic brucellosis, **669**; study on polymyxin, chloromycetin and aureomycin, **1134**; chloromycetin treatment of typhoid fever, **1279**; structure and synthesis, **1490**; bacterial variants in patients treated with chloramphenicol, **1813**; in vitro action of chloramphenicol and 4–4' diaminodiphenyl-sulphone on organisms causing bovine mastitis, **1908**; bacterial resistance, **1935**; in vitro susceptibility of human pathogenic actinomycetes to chloramphenicol, **1965**; treatment of mouse pneumonia caused by virus of feline pneumonitis, **2026**; trial in S. typhi-murium food poisoning from duck eggs, **2242**; in rickettsial infections, **2294**; combined action of penicillin, streptomycin or chloromycetin on enterococci in vitro, **3015**; for treatment swineherd's disease, **3186**; toxicity to bull spermatozoa, **3736.**
See also Staphylococci.
CHLORDANE. See Ticks, control.
CHLORINATED LIME. See Disinfectants, Antiseptics and Sterilization.
CHLORINE. Sodium, chlorine and potassium requirements of growing pigs, **1075.**
CHLOROMYCETIN. See Chloramphenicol.
CHOLESTEROL. Blood-cholesterol elevation, liver and adrenal gland steatosis and testicular atrophy in cholesterol fed hamsters, **143**; relation to protein nitrogen in oedema fluid, **167**; effect of thyroid—and of dinitrophenol—induced hypermetabolism on atherosclerosis in cholesterol fed chicks, **1785.**
CHOLINE. Deficiency in calves, **2346.**
CHOLINESTERASE. Cholinesterase activity in grass tetany and puerperal paresis, **485.**
CHORIO-ALLANTOIS. See Embryos, Fowl, cultivation of micro-organisms in.
CHORIOMENINGITIS, LYMPHOCYTIC. Interference between lymphocytic choriomeningitis and MM viruses, **1022**; review of ten cases, **2918.**
"CHORONA." See Copper.
CHROMATOGRAPHY. Record of conference, **2732.**
See also Neoplasms, general.
CHROMIUM. See Radioactive Isotopes.
CHROMOGENS. Chromogens of cattle urine, **856.**
CHRYSOMYIA. C. bezziana causing blowfly strike in cattle, **2608.**
CILIATES. See Digestive System, flora and fauna.
CIMEX. Cimex lectularius and Rhodnius as carriers of toxoplasmosis, **69.**
CIRCULATORY SYSTEM.
General. Vascular lesions in dogs after thyroidectomy and viosterol feeding, **497**; effect of reduction of cardiac output on renal circulation in dogs, **558**; blood supply of the mesonephros of the sheep, **1510**; removal of pneumococci from splanchnic circulation, **1722**; uptake by tissues of glucose and acetic acid from the peripheral circulation in sheep, **2077**; role of adrenals in the production of renal and cardiovascular damage by anterior pituitary preparations, **2101**; normal pulse rate in Philippine horses, **2706**; technique for the study of vascular pattern, **3098.**
See also Blood; Kidneys, general; Liver, general; Temperature.
Aorta. Arteriosclerotic lesions induced in the aorta of rabbits by freezing, **1467**; depressor and pressor activity of extracts from the aortic wall of cattle, **1838.**
Arteries. Arterial blood collection, **268**; effect of orally or intra-arterially administered lysozyme of gastro-intestinal mucosa, **561**; intraarterial blood pressure during exercise, **1168**; the collateral resistance during obstruction of a main artery, **1840**; arterial perfusion of the liver in shock, **2117**; effect of oestrone and progesterone on arterial system of the uterus in the cow, **3742.**
See also Blood, pressure; Circulatory System, diseases.
Capillaries. Simple staining method for glomerular capillaries, **1880.**
See also Circulatory System, diseases.
Diseases. Streptococcal endocarditis in cattle, **4**; endocarditis in lambs, **296**; endocarditis and pulmonary embolism in horses associated with Shigella equirulis, **315**; heart disease in dogs, **492**; tonoscillography in diagnosis of arterial diseases, **495**; pathogenesis of experimental arteriolar necrosis, **817**; experimental endocarditis in rats, **917**; experimental coronary sclerosis in fowls, **1104-1106**; panarteritis in a dog, **1107**; arteriosclerotic lesions in the aorta induced in rabbits by freezing, **1467**; effect of war-time nutrition on arteriosclerosis and cardiosclerosis, **1754**; effect of induced hypermetabolism on atherosclerosis in cholesterol-fed chicks, **1785**; coronary thrombosis leading to auricular fibrillation in a horse, **2084**; sclerosis of liver veins in the horse, **2085**; treatment of traumatic pericarditis in cattle, **2091**; electrocardiographic studies in dogs affected with bradycardia tachycardia and respiratory arrhythmia, **2100**; effect of cortisone on cardiovascular lesions produced by anaphylaxis, **2127**; exudative pericarditis in Pl. gallinaceum infection in fowls, **2264**; pathogenesis of arteriosclerosis in pyridoxine deficiency, **2341**; effect of potassium on the electrocardiogram in dogs with myocardial infarction, **2354**; myocardial infarction in dogs and tolerance to potassium, **2355**; lesions in myocardium of pigs with endocarditis, **2496**; myocarditis in a young camel, **2658**; lungworms as a cause of allergic lesions in heart muscle of sheep, **2942**; Candida and Aspergillus endocarditis and role of antibiotics in dissemination, **3180**; cardiac lesions in thiamine deficiency in pigs, **3298**; changes in the endocardium of pigs simulating rheumatic stigmata of man, **3685**; causes of arteriosclerosis, **3688**; cardio-vascular responses to air embolism, **3689**; oedema and capillary anoxia, **3690**; atherosclerosis and hyperlipaemia caused by intravenous administration of surface-active agents, **3692-3693.**
See also Blood, diseases; Cholesterol; Electrocardiography; Filariae; Neoplasms, general; Poisons and Poisoning; Shock; Syncope, Fatal in Pigs.
Heart. Effect of reduction of cardiac output on renal circulation in dogs, **558**; experimental mitral valvulotomy in dogs, **1508**; factors affecting heart rate of dairy cows, **2714**; lesions in pups infected with F. & M. disease, **3540.**
See also Electro cardiography; Circulatory System, diseases; Filariae.

CIRCULATORY SYSTEM—[cont'd.]
Veins. Blood volume and intravenous therapy, **516**; sclerosis of liver veins in the horse, **2085**.
See also Blood, pressure; Phosphatase.
CIRRHOSIS. Portal cirrhosis and ascites resulting from arsenic poisoning, **449**.
See also Liver, diseases.
CITILLUS. See Marmots.
CLAVICEPS. Australian ergot C. pusilla, **1801**.
CLIMATE. European cattle breeds in the tropics, **250**; weather and disease, **269**; food of goats in a semi-arid area, **1069**; tropical climates and sexual activity, **1202**; and cattle breeding, **1869**; influence of weather on sheep and goats vaccinated with a Russian anthrax vaccine, **1915**; livestock in the subtropical areas of the U.S.A., **2751**; improving livestock under tropical and subtropical conditions, **3086**; grazing behaviour of cattle in the tropics, **3403**; behaviour of cattle on tropical pastures, **3732**.
See also Altitude; Arctic Regions; Glossina; Light; Rinderpest; Smog; Temperature, environmental.
CLOSTRIDIUM BOTULINUM INTOXICATION [BOTULISM]. Fish borne and type E from pickled herring, **49**; in horses from fodder contaminated with putrid carcasses, **325**; losses in geese, ducks and fowls by a toxin resembling Cl. botulinum toxin, **326**; treatment of lamsiekte, **973**; differential diagnosis of botulism, infectious encephalomyelitis and enzootic paraplegia in horses, **1457**; in cattle in Italy, **1641**; in wild birds, **1642**; in soils of New York State, **1643**; high toxicity of pure botulinum Type D toxin, **1955**; claim that epizootic paraplegia, infectious encephalomyelitis and botulism in horses in Spain are the same disease, **1956**; susceptibility of mink, ferrets and foxes to Cl. botulinum toxins A, B, C and E, **2854**; bulbar paralysis and botulism in horses, **3175**; in a fatal wound infection, **3498**.
CLOSTRIDIUM CARNIS. In mink, **1957**.
CLOSTRIDIUM CHAUVOEI INFECTION [BLACKLEG]. Safety and activity test of sera and vaccines, **46**; in Nigeria, **1237-1238**; Bechuanaland Protectorate, **1239**; aluminium gel vaccine, **2045**; Yugoslavia, **2205**; New Zealand, **2763** and **3110**; Australia, **3413**; Northern Rhodesia, **3421**; Nyasaland, **3768**; Eire, **3769**; Norway, **3770**; Sweden, **3772**.
CLOSTRIDIUM HAEMOLYTICUM. Lecithinase activity of Cl. haemolyticum toxin, **569**.
CLOSTRIDIUM INFECTION.
General. In dried whale meat, **229**; biochemistry of bacterial toxins, **569**.
In Cattle. In cattle and buffaoles in India, **1953**.
See also Clostridium Botulinum Intoxication [Botulism]; Clostridium Chauvoei Infection [Blackleg].
In Fowls. Clostridium welchii and Cl. tertium causing emphysema in poultry in Israel, **48**.
See also Clostridium Botulinum Intoxication [Botulism].
Immunology. Tests for safety and activity of blackleg sera and vaccines, **46**; relation between antitoxic responses to prophylactic injections of antigens, **3615**.
See also Clostridium Tetani Infection [Tetanus].
In Man. See Clostridium Botulinum Intoxication [Botulism].
In Sheep. Black disease in Northern Scotland, **47**; black disease in sheep, **972**; braxy in Eire, **3769**; bradsot in Norway, **3770**.
CLOSTRIDIUM OEDEMATIENS. See Clostridium Infection, in sheep.
CLOSTRIDIUM PERFRINGENS. See Clostridium Welchii.
CLOSTRIDIUM TERTIUM. See Clostridium Infection, in fowls.
CLOSTRIDIUM TETANI INFECTION [TETANUS]. Standardization of anti-tetanic serum, **414**; tetanus anatoxin tests, **415**; tetanus toxin and antitoxin, **752**; in dogs, **1954**; of the brain stem in rabbits, **2247**; Netherlands, **2458**; Denmark, **2459**.
CLOSTRIDIUM WELCHII. Causing emphysema in poultry, **48**; migration of cultures in semi-solid medium, **1640**; significance of hyaluronidase for infectiosity, **2853**; experimental infection in dogs, **3496**; demonstration in tissues, **3497**.
CLOTTING. See Blood, coagulation.
CLOVER, SUBTERRANEAN. Oestrogenic action of extracts, **2649**; oestrogenic effects: mammary development in castrate male g. pigs, **2976**; permanence of the oestrogenic effects on the ewe, **3308**; report, Australia, **3413**; oestrogenic effect of extracts of spring rye grass and clover, **3743**.
CNEMIDOCOPTES. Control of Cn. mutans with D.D.T., **1732**; treatment of Cn. mutans infection with benzene hexachloride, **2621**.
COAGULASE. Coagulase test in the study of staphylococci associated with food poisoning, **1577**; differentiation of pathogenicity of staphylococci by the coagulase test, **2468**.
COAGULATION. See Blood, coagulation.
COASTAL STAGGERS. In Australia, **3412**.
COAST DISEASE. See Cobalt.
COBALT. In ketosis, **150**; deficiency in New York State, **151**; in the nutrition of sheep, **1072**; cobalt and copper deficiency in sheep in South Australia, **1760-1761**; Coast disease prevention by copper and cobalt, **1762**; the B vitamins in relation to cobalt deficiency in sheep, **1772**; in acetonaemia, **2327**; as a remedy for "mossjuka" a deficiency disease of cows in Sweden, **2642**; deficiency of sheep in Queensland, **2966**; metabolism in sheep, **3666**; tolerance in yearling sheep, **3667**.
See also Nutrition; Radioactive Isotopes; Vitamins, vitamin B_{12}.
COCCIDIOIDES INFECTION. Diagnosis, **975**; coccidioidomycosis, **1291**; in a dog, **2856**; contagiousness of sputum, **3178**; infection of g. pigs by contact, **3179**.
COCCIDIOSIS. See Eimeria Infection [Coccidiosis].
COD-LIVER OIL. Influence of tocopherols and cod-liver oil on the stability of milk, **1833**.
COLCHICINE. Colchicine-induced polyploidy in rabbits, **244**; effect on lymphatic tissue of normal and adrenalectomized rats, **2155**.
COLIC. Foreign bodies and seed disinfectants causing colic in horses, **1777**; In St. Kitts-Nevis, **2198**; Leeward Islands, **3415**.
COLLAGEN DISEASES. See Diseases, General.
COLLEGES AND FACULTIES. See Education.
COLLODION. See Immunology, agglutination.
COLOMBIA. See Fasciola.
COLOSTRUM. See Milk and Milk Products, colostrum.
COLUMBIA-SK VIRUS. See Viruses, neurotropic.
COMMITTEES, CONFERENCES AND CONGRESSES. International Bacteriological Code of Nomenclature, **2536**; Directory of collections of micro-organisms maintained in the U.K. and Crown Colonies, **2537**.
See also Chromatography; Foot and Mouth Disease, immunology; Mycobacterium Tuberculosis Infection, in cattle; Newcastle Disease; Reports; Trypanosoma infection, general.
COMMON COLD. Experimental transmission, **1705**.
COMPOST. See Hygiene, of livestock.
CONCEPTION RATE. See Fertility.
CONGLUTINATION. See Immunology, conglutination.
CONGO, BELGIAN. See Buffaloes; Glossina; Nematodes; Research Institutes; Trypanosoma Infection, general; in cattle; treatment and control.
CONGOLESE RED FEVER. See Rickettsia Infection, in man.
CONIUM. See Poisons and Poisoning, plant poisons.
CONJUNCTIVA. See Eyes, general.
CONJUNCTIVITIS. See Eyes, diseases.
COOPERIA. Parasitic gastro-enteritis in sheep, **2062**; Australia, **3412**.
COPPER. Copper pine of calves, **476**; deficiency in cattle, **1071**; hypocupraemia of cattle in East Anglia, **1433**; achromotrichia due to deficiency, **1434**; deposition and excretion of phosphorus in steers on high molybdenum and copper diets, **1759**; cobalt and copper deficiency in sheep in South Australia, **1760-1761**; Coast disease in sheep, **1762** action of stilboestrol on cupraemia, **1774**; "Chorona" a copper deficiency disease in cattle in Brazil, **2082**; deficiency in growing piglets, **2329**; poisoning in cattle, **2669**; role in mammalian pigmentation, **2693**; control of deficiency in lambs, in New Zealand, **3665**.
See also Blood, general; Cupraemia; Milk and Milk Products, chemical composition.
COPPER SULPHATE. See Phenothiazine.
COPULATION. See Reproduction.
CORNEA. See Eyes.
CORNSTALK DISEASE. In U.S.A., **3775**.
CORPUS LUTEUM. See Genital System, corpus luteum.
CORTISONE. See Adrenal Gland, cortisone; Adrenocorticotrophic Hormone (A.C.T.H.).
CORYNEBACTERIUM DIPHTHERIAE. Corynebacterium Infection, in man.
CORYNEBACTERIUM EQUI. Isolated from pigs, **3468**.
CORYNEBACTERIUM INFECTION.
General. Ammonia production by corynebacteria, **314**; pathogenicity of seventeen strains for mice, **3156**; identification of strains, **3466**.
In Cattle. Treatment of bovine pyelonephritis, **200**; penicillin in the prevention of summer mastitis, **313**; udder infusion with aureomycin in Corynebact. pyogenes infection, **937**; penicillin treatment of C. renale pyelonephritis in cattle, **1610-1611**; studies on bovine endometritis, **1612**; C. pyogenes alum-precipitated toxoid against summer-mastitis, **1613**; examination of secretions from udder of summer-mastitis cases, **3470**.
In Horses. Natural immunity in Turkish horses, **2235**; effect of injection of diphtheria prophylactic into apparently normal horses, **2834**.
In Man. Alkali-dissolved diphtheria toxoid-antitoxin floccules adsorbed on aluminium carriers, **2046**.
In Sheep. Associated with arthritis in lambs, differentiation from E. rhusiopathiae arthritis, **24**; caseous lymphadenitis in Czechoslovakia, **651**.
See Youngstock Diseases.

CORYNEBACTERIUM INFECTION—[cont'd.]
In Swine. Causing TB.-like lesions in swine, **3467**; strains of C. equi isolated from pigs, **3468**.
CORYNEBACTERIUM KUTSCHERI. Experimental arthritis in rats produced by C. Kutscheri, **3469**.
CORYNEBACTERIUM PYOGENES. Udder infusion with aureomycin hydrochloride in C. pyogenes infection, **937**; C. pyogenes alum-precipitated toxoid against summer mastitis, **1613**; sensitivity to penicillin, **2479**.
See also Corynebacterium Infection, in cattle.
CORYNEBACTERIUM RENALE. See Corynebacterium Infection, in cattle.
CORYZA, AVIAN. See Haemophilus Gallinarum Infection [Avian Coryza].
COTTON RATS. Effect of ultrasonic vibrations on filariasis of cotton rats [Sigmodon hispidus], **3283**.
See "Grey Lung" Virus.
COTTONSEED MEAL. See Poisons and Poisoning.
COW POX. See Pox Diseases, cow pox.
COXIELLA. See Rickettsia Infection, Q fever.
COXSACKIE VIRUS. A virus isolated from a case of "non-paralytic poliomyelitis" and its possible relation to the Coxsackie group, **1687**; lesions in suckling mice caused by certain viruses isolated from cases of "non-paralytic poliomyelitis" and of pleurodynia, **1688**; cross protection tests in infant mice from vaccinated mothers and immunity transfer through milk, **2013**; lethal infection in cortisone-treated mice, **3554**.
CREATININE. See Urinary System, urine.
CRICETUS. See Hamsters.
CROWS. TB. of the common crow, **1585**.
CRYPTOCOCCUS FARCIMINOSUS INFECTION. See Histoplasma Farciminosum Infection [Epizootic Lymphangitis].
CRYPTORCHIDISM. See Genital System, diseases general.
C.T.A.B. See Cetyl Trimethyl Ammonium Bromide (C.T.A.B.).
CUBA. See Rabies, general.
CUCUMIS AFRICANUS. See Poisons and Poisoning, plant poisoning.
CUCURBITACEAE. See Poisons and Poisoning.
CULEX. Bionomics of C. tarsalis in relation to Western equine encephalomyelitis, **1728**.
CULICOIDES. In the transmission of horse sickness and blue tongue in S. Africa, **2608**.
CUPRAEMIA. See Copper.
CURARE. As an anaesthetic, **3023**.
CYANIDE. Causing lesions in brain and organs in rats, **214**; metabolism and toxicity of cyanides in sheep, **512**; metabolism and toxicity of cyanides, **1797**.
CYPRUS. See Reports, Cyprus.
CYRENAICA. See Zootechny.
CYSTEINE. Protective effect on nitrogen mustard induced leucopenia, **2367**.
CYSTICERCUS. In Blackpool abattoir, **763**; In the Union of S. Africa, **899**; in Gt. Britain, **1047**; in impala and wildebeest, **1410**; C. dromedarii in Eritrea, **2624**; experimental infection of a calf with C. dromedarii by feeding it with T. Eyaenea proglottides, **2625**.
CYTAUXZOON SYLVICAPRAE. Cytauxzoon sylvicaprae in duikers, the cause of a new disease, **355**.
CZECHOSLOVAKIA. See Brucella Infection, Influenza, in swine; Insemination, Artificial; Louping-Ill; Lymphadenitis, Caseous; Mycobacterium Tuberculosis Infection, general; Parasitic Infestation; Syngamus; Trichomonas Infection, in pigeons; Trypanosoma Equiperdum Infection [Dourine].

D

DALLIS GRASS. Poisons and Poisoning, plant poisoning.
DAMA DAMA. See Deer.
DATURA TATULA. See Poisons and Poisoning, plant poisoning.
D.D.T.
General. Control of Boophilus microplus with D.D.T. and benzene hexachloride, **110**; reversible action of D.D.T., **210**; against blowfly strike in sheep, **424**; absorbtion and metabolism by resistant and susceptible house flies, **425**; dipping trials, **533**; D.D.T. sensitiveness of various parts of the body of house-flies, **1036**; high pressure sprays in control of Melophagus ovinus, **1038**; visceral leishmaniasis and Phlebotomus control by means of D.D.T., **1727**; control of Cnemidocoptes mutans, **1732**; persistence on sprayed cattle, **2053**; for control of lice in man, **2129**; for control of American dog tick and gypsy moth, **2306**; for control of arthropod parasites, in S. Africa, **2608**; acaricidal properties, **2618**; relative efficiency in tick-dipping tanks, **2686**; as a rodenticide, **2740**; and B.H.C. for control of body strike in sheep, **2926**; effect of spray residues on larvae of D. variabilis, **2931**; a test for assaying D.D.T.—B.H.C. in dipping tanks, **3025**; contamination of milk, **3057**; in milk after spraying of barns, **3058**; resistance of houseflies and mosquitoes, **3263**; rational use in animal husbandry, **3337**; excretion in milk, **3366**; for prevention of body strike, **3627**; inheritance of resistance, in houseflies, **3630**.
See also Parasiticides.
Toxicity. Comparative effect of D.D.T. and other insecticides against houseflies and Aëdes mosquitoes, **756**; experimental D.D.T. poisoning with reference to the nervous system, **1474**; toxicity test of D.D.T. when applied to the skin, **1475**; loss of toxicity when applied to limewash, **2054**; tests with house-flies and larvae resistant to D.D.T., **2302**; similarity between D.D.T. poisoning and "Virus X" gastro-enteritis, **2368**; of residues, **2369**; sheep and cattle, **2672**.
DECARBOXYLATION. Effect of antihistamines on bacterial decarboxylation of histidine, **1982**; of succinic acid by washed rumen bacteria, **2141**.
DEER. Experimental transmission of deer lungworm, **442**; use of corpora lutea for determination of ovulation incidence in white-tailed deer, **1515**; occurrence of Br. abortus agglutinins in Dama dama, Sika nippon and Capreolus capreolus in the South of England, **3489**.
See also Rabies, in wild animals.
DEHORNING. Of cattle, **252**; Report, National Institute for Dairy Research, Reading, **1228**; dehorning crush and bail, **3391**.
DEHYDRATION. See Laboratory Animals.
DEHYDROGENASE. Lactic dehydrogenase activity of certain tumours and tissues, **2072**; effect of E. stiedae on succinic dehydrogenase activity of liver tissue in rabbits, **2263**.
DELAFONDIA. See Strongyles.
DEMODEX. See Mange.
DEMYELINATION. See Nervous System, diseases.
DENDROHYRAX ARBOREA. See Hyrax.
DENGUE FEVER. Influence of hydroxylamine on the virus in the mouse, **1710**.
DENMARK. See Foot and Mouth Disease, immunology; Insemination, Artificial, in cattle; Leptospira Infection, in dogs; Mycobacterium Tuberculosis Infection; Reports, Denmark.
DENTITION. See Teeth.
DERMACENTOR. See Ticks, Ixodidae.
DERMANYSSUS. Virus of eastern equine encephalomyelitis isolated from Dermanyssus gallinae and Eomenacanthus stramineus, **81**; infestation in man in New Zealand, **1043**.
DERMATITIS, GENERAL. See Epidermoptes; skin, diseases.
DERMATITIS, OVINE CONTAGIOUS PUSTULAR. "Orf" in meat packers in London, **2284**; human infection, **2285**.
DERMATOBIA. Parasitic infestation in Uruguay, **703**; Brazil, **2299**.
DERMATOPHYTES. See Fungi.
DERMATOSIS. See Skin, diseases.
DESICCATION. See Technique and Apparatus, general.
DESOXYCORTICOSTERONE. Desoxycorticosterone therapy in ketosis, **1447**; interrelationship of desoxycorticosterone, cortisone and vitamin C and genesis of mesanchymal lesions, **1496**; progesterone and desoxycorticosterone metabolism in rabbit does of endogenous and exogenous origin, **3082-3083**; desoxycorticosterone acetate and wound healing, **3334**.
DESOXYRIBONUCLEASE. Liquefaction of viscous purulent exudates by desoxyribonuclease, **1786**; elaboration by streptococci and inhibition by a substance extractable from the cocci, **3518**.
DESOXYRIBONUCLEIC ACID. Interstitial desoxyribonucleic acid following cell death, **543**; determination of inherited traits of H. influenzae by desoxyribonucleic acid fractions isolated from type-specific cells, **3161**; extent of enzymatic degradation of desoxyribonucleic acid in purulent exudates by streptodornase, **3714**.
DETERGENTS. Bactericidal properties of certain cationic detergents, **2131**.
See also Surface-Active Agents.
DEUTERIUM. See Physiology.
DIABETES. Effect of war-time nutrition on diabetes, **1754**; experimental diabetes insipidus-like condition in dogs by a potassium-deficient diet, **2330**; a case of diabetes mellitus in a cow, **3679**.
DIAMIDINES. Trypanosoma Infection, treatment.
DIAMINODIPHENYL SULPHONE. Fatal poisoning with udolac (diaminodiphenyl sulphone), **822**; galactose derivative of 4:4′ diaminodiphenyl sulphone for treatment of some infectious conditions in cattle, **823**; in vitro action of chloramphenicol and 4-4′ diamino-diphenyl-sulphone on organisms causing bovine mastitis, **1908**; and penicillin in treatment of various forms of mastitis, **2481**.
2,6-DIAMINOPURINE. Effect on blood and bone marrow in pigs, **488**.
DIARRHOEA.
General. See Digestive System, diseases.
Bacillary White, of Ducks. See Salmonella Pullorum Infection.
In Calves. Sulphathalidine for treatment and prevention in calves, **2352**; in New Zealand, **3110**; in Brazil, caused by S. dublin, **3162**.

1, 1 - DICHLORO - 2, 2 - BIS [PARA-CHLOROPHENYL] ETHANE. See Insecticides.
DICHLORODIAMINOBENZENE. Selective toxicity of 1,2-dichloro-4, 5 diamino benzene in relation to vitamin B_2 and B_{12} requirement, **2343.**
2,4-DICHLOROPHENOXY-ACETIC ACID. Effect on potassium nitrate levels in leaves of sugar beets, **1472.**
DICROCOELIUM. D. dendriticum in sheep in New York State, **1044**; toxicity of antimony compounds for D. lanceolatum, **2934-2935.**
See Eurytrema Pancreaticum.
DICTIONARIES. See Books, miscellaneous.
DICTYOCAULUS. Lungworm disease in sheep in Germany and hibernation of D. filaria larvae, **118.**
DICUMAROL. Coagulation defect of vitamin K deficiency compared with that of dicumarol, **803**; dicumarol and synthetic anti-vitamins K, **804**; treatment of dicumarol-induced hypoprothrombinaemia in dogs with vitamin K_1, administered intravenously, **3295.**
DIET. See Nutrition.
DIETHYLSTILBOESTROL DIPROPIONATE. See Hormones.
DIFFUSION FACTORS. See Hyaluronidase.
DIGESTIVE SYSTEM.
General. Ruminal fistula and cannula for cattle, **267**; microbial digestion in the alimentary tract, **559**; effect of orally or intra-arterially administered lysozyme of gastrointestinal mucosa, **561**; histochemistry of anal sac glands in dogs, **564**; architecture of avian gut and crude fibre tolerance, **568**; gastrointestinal hormones, **1174**; the alimentary tract of sheep in South Africa, **1431**; physiology of the digestive system in unweaned calves, **1843**; plasma iron and saturation of plasma iron-binding protein in dogs as related to the gastro-intestinal absorption of radioiron, **2080**; rate of passage of food residues through the digestive tract of horses, **2708**; the alimentary tract of Merino sheep in South Africa, **3351-3356**; growth of digestive system in the dog foetus, **3720.**
See also Nutrition; Poisons and Poisoning; Poliomyelitis; Vitamins, vitamin B complex.
Abomasum. Haemonchus santomei in the abomasum of cattle, **1049**; effect of insulin on acidity of abomasal contents of lambs, **1830**; temperature in goats, **2394.**
Caecum. Motility of the caecum of the horse, **1841.**
See also Digestive System, diseases.
Diseases. Nutritional haemorrhagic gastroenteritis, yellow fat and anaemia in mink, **156**; virus enteritis in mink, **383**; gastroenteritis in chinchilla, **493**; Haemonchus santomei in the abomasum of cattle, **1049**; carbohydrate metabolism and chronic diarrhoea, **1037**; sulphonamide treatment of enteritis-pneumonia syndrome in swine, **1136**; aetiology of swine dysentery, **1285**; foreign bodies and seed disinfectants causing colic in horses, **1777**; parasitic gastro-enteritis in sheep, **2062**; treatment of traumatic pericarditis/gastritis in cattle, **2091**; fatal intussusception of the canine caecum associated with Toxoplasma, **2267** similarity of D.D.T. poisoning and "virus X" gastro-enteritis, **2368**; examination of stomach and intestinal content of horses with certain disorders of the alimentary tract, **2653**; necrotic enteritis of swine in Italy, **2663**; significance of faecal egg counts in the diagnosis of parasitic gastro-enteritis in cattle, **3276**; foreign body operation in ruminants, **3315.**
See also Colic; Ketosis; Neoplasms, spontaneous; Poisons and Poisoning; Quail; Strongyles; Sugar Beet; Tympanites.
Flora and Fauna. Digestion of rumen microorganisms by the host animals, **140**; effect of rumen inoculations on the digestibility of roughage in young calves, **141**; influence of casein on roughage digestion in cattle and bacteriological study of the rumen, **145**; trace elements in rumen micro-organisms, **220**; microbial digestion, **559**; protozoa of the bovine stomach, **560**; development of calves raised without rumen micro-organisms, **1066**; in normal domestic fowls, **1845**; decarboxylation of succinic acid by washed suspensions of rumen bacteria, **2141**; reduction of nitrate by rumen bacteria, **2142**; conversion of sugars by holotrich ciliates in the rumen of sheep, **2384**; study on effect of nitrogen intake on number of ruminal microorganisms in sheep, **2396**; effect of antibiotics on intestinal microflora and growth of turkeys and pigs, **3012**; microbial digestion in the alimentary tract, **3029**; effect of fasting on the activity of ruminal flora of sheep and cattle, **3351**; influence of sulphanilamide, **3352**; effect on rumen digestion, **3357.**
See also Veillonella.
Intestine. Relationship in mice of intestinal emptying time and natural resistance to pig ascarids, **123**; perforation of the feline intestine by toxocava cati, **124**; biliary metaplasia in mucosa of equine duodenum, **221**; duodenal glands and erythrocyte formation in swine, **553**; effect of orally or intra-arterially administered lysozyme of gastrointestinal mucosa, **561**; effect of urecholine, **2118**; finer structure of mouse intestinal cells seen by electron microscope, **3724.**
See also Faeces; Magnesium Salts; Secretin.
Oesophagus. Glycaemia and reflex closure of the oesophageal groove, **556**; experimental study on the use of oesophagus transplants in dogs, **2196.**
Rumen. Action of histamine on ruminal musculature, **854**; temperature in goats, **2394**; effect of pH of contents on motility, **3355**; absorption of acetate, propionate and butyrate from rumen of sheep, **3358.**
See also Fatty Acids; Metabolism.
Ruminant Digestion. Cobalt and synthesis of vitamin B_{12} in rumen of sheep, **1073**; physiological changes in intermediary metabolism of ruminants, **1160**; in vitro study of rumen digestion, **1501**; photokymographic studies of the process of rumination, **1842**; toxic factors in rumen ingesta, **2111**; factors influencing in vitro digestion of cellulose by rumen liquor in the presence of an antiseptic, **2395**; physiology of the forestomachs of ruminants, **2715**; fermentation of carbohydrates in the digestive tract of ruminants, **2729**; a model for the demonstration of mechanics of rumination and vomiting, **2758**; effect of aureomycin on digestion in steers, **2960**; role of microflora in rumen digestion, **3357.**
See also Digestive System, flora and fauna; Metabolism.
Stomach. Thirst and its inhibition in the stomach, **1157**; effect of urecholine, **2118**; production of hypochlorhydria by beta radiation of the stomach, **3694.**
See also Surgery.
DIGITALIS. See Poisons and Poisoning, plant poisoning.
DI-IODO^{131} FLUORESCEIN. See Radioactive Isotopes.
DIMERCAPROL. See B.A.L.; Neoplasms, causation.
4-DIMETHYL-AMINO-AZOBENZENE.
DIMIDIUM BROMIDE. See Trypanosoma Infection, treatment.
DINITROPHENOL. Effect of thyroid—and of dinitrophenol—induced hyper-metabolism on atherosclerosis in cholesterol fed chicks, **1785.**
See also Poisons and Poisoning, general.
DINR. 49-1. See Antibiotics, bacterial products.
DIPETALONEMA. In camels, **3625**; D. evansi and its microfilaria, from camels, **3648.**
DIPHTHERIA. See Corynebacterium Infection.
DIPHYLLOBOTHRIUM. Staining of ova, **2936.**
DIPLODIA ZEAE. See Poisons and Poisoning, plant poisoning.
DIPS. See Arsenic; Benzene Hexachloride; D.D.T.; Parasiticides; Technique and Apparatus, zootechnical.
DIPYLIDIUM. Action of areca nut and Filix mas extracts on D. caninum, **2626.**
DIROFILARIA. Filariasis.
DISC PROTRUSION. Roentgen diagnosis, in dogs, **3687.**
DISEASES, GENERAL. Mixed and secondary infections, **159**; non-infectious diseases of young animals, **160**; weather and disease, **269**; investigation of airborne infections, **334**; fungous diseases of animals, **672**; dangers of mass inoculation using a common syringe, **809**; collagen diseases, **819**; factors in the aetiology of infective diseases, **1088**; eradication of disease, **1089**; social and geographical pathology, **1456**; experimental epidemiology of respiratory infections, **1468**; skeletal changes associated with diseases of the blood, **1507**; hereditary diseases in animals, **1543-1544**; diseases of animals in Fiji, **1775**; diseases of animals in Ethiopia, **1776**; turbidimetric gamma globulin determinations in hepatobiliary diseases, **1787**; specific prophylaxis of infectious diseases of animals, **1805**; bacterial content of water and dissemination of diseases, **2163**; report, Livestock Department California, **2203**; analysis of infection rates in diseases in which superinfection occurs, **2350**; report, Denmark, **2459**; ecology of health, **2651**; communicable diseases of animals in Australia, **2652**; exotic infectious diseases of animals in Australia, **2977**; control of infectious diseases in Indonesia, **2978**; state of livestock diseases in Japan, **2979**; distribution of incubation periods of infectious disease, **2981**; influence of A.C.T.H. and cortisone on mechanism of infection, **3021**; compost and animal diseases, **3070**; pseudo-poliomyelitic diseases of animals, **3247**; international organisations for control of epizootics, **3310**; effect of cortisone on the pathologic responses of g. pigs infected with fungi, viruses and bacteria, **3333**; adrenal-hyaluronidase relationship in infection, **3517.**
See also Blood, diseases; Bones, diseases; Books, diseases, general; Circulatory System, diseases; Digestive System, diseases; Disc Protrusion; Eyes, diseases; Goitre; Haemoglobinuria; Hernia; Insemination, Artificial; Kidneys, diseases; Marie's disease; Metabolism; "Mossjuka"; Nervous System, diseases; Oedema disease, of swine; Ophthalmia Periodic; Panting; Perosis; Reports; Research Institutes; Respiratory System, diseases; Rheumatism; Rhinitis, Infectious Atrophic; Skin, diseases; Snuffles; Syncope, Fatal in Pigs; Teratology; Urinary System, diseases; Wounds; Youngstock, Diseases.
DISINFECTANTS, ANTISEPTICS AND STERILIZATION. Resistance of Newcastle disease virus to formaldehyde fumigation, **90**; bactericidal effect of disinfectants on Str. agalactiae, **1247**; hatchery fumigation with formaldehyde

DISINFECTANTS, ANTISEPTICS AND STERILIZATION—[cont'd.]
against Newcastle disease, **1374**; sterilization of land against poultry parasites, **1724**; seed disinfectants causing colic in horses, **1777**; antiseptics in bovine trichomoniasis, **1991**; disinfection of goat hair, **2176**; grobantol and finantol, **2689**; resistance of anthrax spores to perchloride of mercury, chlorinated lime and chloramine, **2817**; sterilization of plastic syringes by formalin vapour, **3100**; preservation of shell eggs, use of chemical disinfectants in cleaning machines, **3368**.
See also Aerosols; Detergents; Digestive System, ruminant digestion; Ethylene Oxide; Fungicides; Surface-Active Agents; Triethyleneglycol.

DISTEMPER, DOG.
General. Relation to human poliomyelitis, **85**; nasal inclusion bodies, **379**; calcium and phosphorus content of blood, **381**; breed and susceptibility, **724**; similar diseases, **1013**; inclusion bodies in diagnosis, **1014**; in Trinidad and Tobago, **1234**; in St. Kitts-Nevis, **2198**; in Denmark, **2459**; relationship with poliomyelitis, **2590**; haematological studies in dogs, **2988**; prognosis, **3232**; transmission of canine virus to rabbits, **3233**; in Zanzibar, **3420**; and "hard pad" and infectious hepatitis, **3575**; nervous forms, **3576**; susceptibility of lion cubs, **3577**.
Immunology. Haemagglutination reaction, **380**; vaccination with Laidlaw-Dunkin's virus serum and Green's vaccine, **2288**; group immunity between rabies and distemper, **2891**; transmission of canine virus to rabbits, **3233**; transmission to lion cubs, **3577**; dried aluminium hydroxide adsorbate vaccine, **3578**; killed tissue vaccines, **3579**; egg-adapted modified virus vaccine, **3580**; effect of vaccination against infections by different routes, **3581**.
Treatment. Treatment, **377**; treatment of hepatitis and nephritis in dog distemper, **378**; treatment, **725**; parenteral use of penicillin and streptomycin in complications, **2287**; vitamin B_{12} in treatment of nervous form, **3234**.

DISTOMATOSIS. See Fasciola.

DOCKING. In lambs, **1550**; bloodless castration and tailing of lambs, **3393**.

DOGS.
General. Care of dogs used in research, **1223**.
See also Anal Glands; Anatomy; Blood; Circulatory System, heart; Digestive System, oesophagus; Electrocardiography; Foetus; Genital System, ovary; Metabolism; Nutrition, dogs; Phosphatase; Pituitary Gland, anterior hormone; Pregnancy; Respiratory System, general; Sex Hormones, oestrogens; Skin; Sweating; Teeth; Vitamins, vitamin B_1; Wounds.
Arthropod Parasites. See Mange, in dogs; Pneumonyssus; Ticks.
Bacterial Diseases. See Bartonella Infection, in dogs; Brucella Infection, immunology; Clostridium Tetani Infection (Tetanus); Clostridium Welchii; Coccidioides Infection; Erysipelothrix (Listeria) Monocytogenes Infection; Kidneys, diseases; Leptospira Infection; Mycobacterium Tuberculosis Infection, in dogs; Salmonella Infection, in dogs; Spasmophilia; Streptococci.
Diseases General. Stomach surgery in dogs, **1466**.
See also Agene; Alpha-Napthyl Thiourea (Antu); 4-Amino-Pteroylglutamic Acid; Circulatory System, diseases; Diabetes; Disc Protrusion; Eyes, general; diseases; Hysteria, Canine; Kidneys, general; diseases; Marie's Disease; Neoplasms, venereal; Renin; Tetany.
Fungous Diseases. See Actinomyces Infection; Histoplasma Infection, in dogs.
Helminth Parasites. See Ancylostoma; Anthelmintics; Caricide; Dracunculus; Filariasis; Filaroides osleri; Lungworms; Spasmophilia; Spirocerca; Strongyloides.
Protozoan Diseases. See Babesia Infection [Piroplasmosis]; Giardia; Leishmania Infection; Spasmophilia; Toxoplasma Infection; Trypanosoma Equiperdum Infection [Dourine].
Rickettsial Diseases. See Rickettsia Infection, in dogs.
Virus Diseases. See Aujeszky's disease; Distemper, Dog; Encephalitis, Canine; Encephalomyelitis, general; Foot and Mouth Disease, general; Granuloma, Venereal; Hard Pad Disease; Hepatitis, Canine Virus; Leucosis, in dogs; Neoplasms; Parotitis; Rabies; Viruses, neurotropic.

DOMINICAN REPUBLIC. See Encephalomyelitis, Equine, eastern.

DONKEYS. Group-specific substances in ass saliva, **1393**.

DOPING. Racehorses, **1886**.

DOURINE. See Trypanosoma Equiperdum Infection.

DOVES. See Newcastle Disease, immunology; Pancreas.

DRACUNCULUS. Dracunculus insignis in a dog, **125**.

DRAMAMINE. In treatment of radiation sickness, **2374**.

"DRYING OFF." See Lactation.

DUBOS' MEDIUM. See Mycobacterium Tuberculosis, cultivation.

DUCK PLAGUE. Relationship with fowl plague and Newcastle disease, **2594**.

DUCKS. See Caponization; Clostridium Botulinum Intoxication, [Botulism]; Duck Plague; Food Hygiene, general; Fungi; Haemoproteus Infection; Leucocytozoon Infection; Neoplasms, general; Nutrition; Pasteurella Infection, avian; Plasmodium Infection, avian; Plasmodium Lophurae; Preen Gland; Psittacosis; Theobromine; Vitamins, vitamin D.

DUIKER. See Antelopes.

DUODENUM. See Digestive System, intestine.

DUREN DISEASE. See Poisons and Poisoning, organic poisoning.

DUST. Occupied rooms, **576**; R. burneti from air-borne dust, **747**; survival of bacteria in dust, **844**.

DUST CELLS. Structure, relation and mode of action of dust cells in albino mice, **2397**.

DWARFISM. See Heredity, general.

DYES. Liver tumours in mice injected with commercial food dyes, **1426**; identification of blood donors with fluorescent dye, **1561**; identification of Br. abortus Strain 19 by dye bacteriostasis, **1639**; toxic effect on rats of "ratanjot", a dye prepared from Onosma echioides and used for colouring edible fats, **1804**; effect on F. hepatica, **3634**.
See also Technique and Apparatus, staining.

DYSENTERY, BACILLARY. See Shigella Flexneri.

DYSENTERY, SWINE. Vibrionic dysentery in swine, **1287**; vibrionic dysentery in pigs, **1288**; in U.S.A., **3426**; in swine, **3446**.

DYSPNOEA. Soft palate dyspnoea in two racehorses, **1459**.

DYSTOCIA. See Parturition.

DYSTROPHY. See Muscles.

E

EAR.
General. Glands in the external auditory meatus of the cat, **2694**.
See also Acoustics; Ultrasonics.
Diseases. Otitis in piglets, **2096**; disease caused by sheep dips containing benzene hexachloride, **2983**.

EAR TICK. Ticks, Argasidae.

EAST COAST FEVER. Theileria Infection.

EASTERN ENCEPHALITIS. See Encephalomyelitis, Equine.

ECHIDNOPHAGA GALLINACEA. In Union of South Africa, **2764**.

ECHINOCOCCUS. In a monkey, **1736**; hydatid disease in America, **1737**; prophylaxis in Argentina, **1738**; in Portugal, **2060**; occurrence of E. granulosus in Gelderland, **2623**; in Alaska, and rodents as intermediate hosts, **3271**.

ECTROMELIA, INFECTIOUS. See Pox Diseases, general.

EDUCATION.
Canada. See Reports, Canada.
United Kingdom. See Reports, United Kingdom.
U.S.A. Veterinary education in the U.S.A., **1528**.
See also Reports, U.S.A.
U.S.S.R. Academy of Medical Sciences, **618**; aims of veterinary colleges in the U.S.S.R., **867**; training junior veterinary staff, **868**; Academy of Agricultural Science, **896**; 29th plenary session of the U.S.S.R. Academy of Agriculture, Veterinary Section, **1224**; early history in Russia, **1857**; Lenin Agricultural Academy, **3369**.

EGGS, ARTHROPOD. See Ticks, Ixodidae.

EGGS, DUCK. S. typhi-murium food poisoning from duck eggs, **956**, **1942** and **2242**.
See also Embryos, Fowl.

EGGS, HELMINTH. Trematode egg count in sheep faeces, **260**; fertility of strongyle eggs in phenothiazine treated horses, **439**; counting chambers for helminth ova, **605**; diagnosis of nematode species by egg characteristics, **1416**; differentiation of eggs of Haemonchus contortus and Ostertagia species, **1418**; seasonal variation in worm egg output in Scottish hill sheep, **1742**; spontaneous hatching of Ascaris megalocephala eggs on silica-gel, **1748**; viability of ova of A. equorum, **2066**; cultivation of eggs of A. megalocephala on solid media, **2632**; viability of Ascaridia eggs, **2633**; staining of Diphyllobothrium ova, **2936**; significance of faecal egg counts in the diagnosis of parasitic gestro-enteritis in cattle, **3276**.

EGGS, HEN.
General. S. typhi-murium in hens' eggs, **955**; mould rot in eggs, **1183**; acid-fast bacilli in hen egg media, **1209**; pasteurization of liquid egg products, **1524**; Dutch method of egg pasteurization, **1525**; inheritance of egg production, **1901**; a substance from yolk protecting aureomycin from deterioration, **2377**; effect of creeping indigo on laying fowls, **3003**; incidence of rotting in washed and unwashed eggs, **3062**; storage of machine-washed eggs, **3063**; effect of thyroprotein on production, **3089**; studies in the preservation of shell eggs, **3367**; preservation of shell eggs, use of chmical disinfectants in cleaning machines, **3368**; high environmental temperatures as affecting reaction of laying hens to iodized casein, **3756**.

EGGS, HEN—General—[cont'd.]
See also Embryos, Fowl; Leucosis, Avian; Mycobacterium Tuberculosis, cultivation; Newcastle disease; Technique and Apparatus, media; Viruses, cultivation.
Hatchability. Decrease of hatchability and catalase content in stored eggs, **859**; use of oxygen in hatching of hens' and turkey eggs at high altitudes, **886**.
EGGS, MAMMALIAN. Genital System, ovary, oviduct and ovulation.
EGYPT. See Rinderpest, immunology.
EIMERIA INFECTION [COCCIDIOSIS].
General. Treatment with sulphonamides, **700**; economic losses caused by, **1324**; sulphaquinoxaline, nitrofurazone and nitrophenide in experimental E. necatrix infection, **2262**.
Avian. Carbon tetrachloride in coccidiosis in fowls and turkeys, **64**; treatment of turkeys with phenothiazine and sulphonamides, **65**; effect on susceptibility to Ascaridia Galli, **449**; control in chickens, **698**; sulphaquinoxaline for control, **699**; Eimeria pfeifferi infection in homing pigeons, aggravated with Ascaridia columbae, **701**; in U.S.A., **901**; effect of thiouracil-induced hypothyroidism on resistance to experimental E. tenella infection of chicks, **1327**; coccidiosis in turkeys caused by E. meleagridis and E. meleagrimitis, **1328**; experimental chemotherapy of coccidiosis in turkeys, **1329**; factors influencing origin and course of epidemics, **1667**; in Denmark, **2459**.
See also Eimeria Infection [coccidiosis], treatment.
In Cattle. Treatment with iodochloroxyquinoline, **349**; E. smithi in cattle in Finland, **2261**.
See also Eimeria Infection [Coccidiosis], treatment.
In Dogs. Associated with spasmophilia and canine hysteria, **2097**.
In Rabbits. Effect of E. stiedae on succinic dehydrogenase activity of liver tissue in rabbits, **2263**; species in the domestic rabbit, **2552**.
In Sheep. Coccidiosis in lambs, **1325**.
In Swine. E. polita and other coccidia occurring in the domestic pig, **1326**.
Treatment. In fowls and turkeys with carbon tetrachloride, **64**; in turkeys with phenothiazine and sulphonamides, **65**; in calves with iodochloroxyquinoline, **349**; sulphamethazine and sulphaquinoxaline in experimental coccidiosis in chicks, **350**; with sulphonamides, **700**; testing of coccidiostatic drugs, **1001**; experimental chemotherapy in turkeys, **1329**; with sulphaquinoxaline, nitrofurazone and nitrophenide, **2262**; in cattle with neotodorit, **2550**; chemotherapy, **2551**; mepacrine hydrochloride in chicks, **2553**; control in fowls with sulphamerazine, **3526**; sulphonamide treatment, in fowls, **3527**; sulphaquinoxaline and sulphamethazine in fowls and turkeys, **3528**; nitrofurazone for control of avian coccidiosis, **3529**.
EIMERIA IRRESIDUA. In rabbits, **2552**.
EIMERIA MEDIA. In rabbits, **2552**.
EIMERIA MELEAGRIDIS. See Eimeria Infection [Coccidiosis], avian.
EIMERIA MELEAGRIMITIS. See Eimeria Infection [Coccidiosis], avian.
EIMERIA NECATRIX. See Eimeria Infection [Coccidiosis], general.
EIMERIA PFEIFFERI. See Eimeria Infection [Coccidiosis], avian.
EIMERIA PIRIFORMIS. In rabbits, **2552**.
EIMERIA POLITA. See Eimeria Infection, in swine.
EIMERIA SMITHI. See Eimeria Infection [Coccidiosis], in cattle.
EIMERIA STIEDAE. See Eimeria Infection [Coccidiosis] in rabbits.
EIMERIA TENELLA. See Eimeria Infection [Coccidiosis], avian.
EIRE. See Ireland, Republic of.
ELECTRICITY. Electroplectic anaesthesia, **253**; electric fences for sheep, **254**; electrically heated equipment, **264**; electrical stunning, **884**; electrical conductivity of milk for diagnosis of mastitis, **2182**; electrical measurement of bull semen activity, **2413**.
ELECTROCARDIOGRAPHY. Studies in dogs, **2100**; effect of potassium on electrocardiogram of dogs, **2354**; precordial electrocardiogram in the horse, **2388**; normal electrocardiogram of the dog, **2389**; effect of helvedrin on the electrocardiogram in dogs, **2685**.
ELECTROLYTE. See Metabolism.
ELECTROMANOMETER. See Blood, pressure.
ELECTRON MICROSCOPY. See Technique and Apparatus, microscopy.
ELEPHANTS. Morphology of the brain in an African elephant foetus, **3361**.
EMBOLISM. See Circulatory System, diseases.
EMBRYOS, FOWL.
General. Effect of folic acid, **805**; failure of antibody production in chick embryos, **1026**; properties of chick allantoic fluid in relation to influenza virus agglutination, **1358**; abnormalities in the beaks of developing chick embryos, **2364**.
See also Technique and Apparatus, tissue culture.
Cultivation of Micro-Organisms in. Rabies virus, **74**; trichomonas foetus, **343**; preparation of fowl pox vaccine from chick embryo passaged pigeon pox virus purified with penicillin, **366**; F. & M. disease virus, **707**; clinical applications of chick embryo cultures, **889**; injection of infectious bronchitis virus into chick embryos, **1020**; for isolation of Brucella, **1634**; propagation of the agent of infectious hepatitis, **1703**; propagation of pathogenic fungi, **2861**; host-cell-virus interrelationship in fowl pox, inclusion produced on the chick chorioallantoic membrane, **3545**; behaviour of virus from chicken and duck tumours, **3661**.
See also Distemper, Dog, immunology; Encephalitis, western; Influenza, virus; Newcastle Disease, immunology; virus; Pasteurella Septica; Rinderpest, immunology; Vibrio Fetus Infection.
EMBRYOS, MAMMALIAN. Passage of antibodies from mother to embryo in rabbits, **1027**; development of the mesonephros of the sheep, **1509**; blood supply of the mesonephros in sheep, **1510**; attempts to produce Negri bodies in embryonic nervous tissue in the absence of rabies virus, **2001**; nephric development and pronephros in sheep, **2147**; embryology of the rabbit vagina, **2403**; mechanism by which sulphadiazine affects survival of the mammalian embryo, **3331**; borderland of embryology and pathology, **3387**.
See also Foetus.
EMETINE HYDROCHLORIDE. In treatment of mulleriasis of sheep and goats, **1420**.
EMPHYSEMA. Pulmonary and subcutaneous emphysema as symptoms of bovine influenza, **715**; histamine levels in pulmonary emphysema in the horse, **2086**; effect of aminophylline, **2122**; action of histamine and other drugs on bronchial tone of horses with alveolar emphysema (heaves), **2123**.
See also Clostridium Infection, in fowls.
ENCEPHALITIS.
General. Antigenic relationship of mouse encephalitis viruses, **718**.
Canine. Comparison with Teschen disease and poliomyelitis, **84**; a study of canine encephalitis, **1360**; causing a syndrome characterized by tremor, **2277**.
Japanese B. Susceptibility of Japanese wild birds, **1009**; congenital infection in swine, **2276**; naturally infected horses, **2576**; protective effect of formol killed vaccine, **2577**; complement fixation test, **2578**; in relation to still-birth in sows, **2579**; epidemic swine still-birth in Japan in relation to equine encephalitis, **2580**; histopathological studies on swine still-birth, **2581**; experimental studies on swine, **2582**; in cattle, **2583**; isolation of virus from horses and sows, **2584**; immunological relationship to Japanese equine encephalomyelitis, **3555**.
Spring-Summer. Isolation from ticks of a Czech encephalitis virus related to louping-ill and spring-summer encephalitis, **1684**.
See also Louping-Ill.
Western. Oxygen uptake of infected embryonated eggs, **2898**.
ENCEPHALOMALACIA. In chicks, **2349**.
ENCEPHALOMYELITIS.
General. Acute disseminated encephalomyelitis after brain extract immunization in the dog, **1685**; disseminated encephalomyelitis in Rhesus monkeys and complement-fixing antibodies, **1686**; a lipolytic enzyme in reactive histiocytes of g. pigs with experimental encephalomyelitis, **3557**.
See also Clostridium Botulinum Intoxication (Botulism).
Allergic. See Immunology, allergy.
Mouse. Mouse encephalomyelitis (TO strain), **1010** and **1011**.
ENCEPHALOMYELITIS, EQUINE.
General. In pheasants in New Jersey, **373**; differential diagnosis of botulism, infectious encephalomyelitis and enzootic paraplegia in horses, **1457**; a brief symposium, **1689**; complement-fixation test in type determination, **1690**; therapy and prophylaxis, **2014**; prevention by arthropod control, **2585**; breeding mice free of the virus, **2586**; immunological relationship between viruses of Japanese B encephalitis and Japanese equine encephalomyelitis, **3555**.
Borna Disease. A disease in Turkey, resembling Borna disease, **3681**.
Eastern. Isolation of the virus from chicken mites and chicken lice, **81**; antibody survey following an outbreak in man and horses in the Dominican Republic, **3556**; in the U.S.A., a report, **3774**.
Western. Bionomics of Culex tarsalis in relation to Western equine encephalomyelitis, **1728**.
ENCEPHALOMYELITIS, PORCINE [TESCHEN DISEASE]. Comparison with dog encephalitis and poliomyelitis, **84**; in wild boars, **376**; adsorbate and crystal violet vaccines, **723**; is porcine encephalomyelitis part of the swine influenza complex? **1012**; in Madagascar, **1365**; virus con-

ENCEPHALOMYELITIS, PORCINE [TESCHEN DISEASE]—[cont'd.]
tent of central nervous system of unweaned piglets following inoculation with Teschen disease virus, **1366**; a new form of paralysis in swine, **2021**; outbreaks in Italy of a disease closely resembling Teschen disease, **3230**; in Madagascar, **3425**; in Italy, **3570**; in Slovenia, **3571**; neuropathology, **3572**; an atypical case in Italy (oedema disease?), **3573**; immunization, **3574**.
ENCEPHALO-MYOCARDITIS GROUP. See Viruses, neurotropic.
ENCHONDROSIS INTERVERTEBRALIS. See Disc Protrusion.
ENDOCARDITIS. See Circulatory System, diseases.
ENDOCRINE SYSTEM. Effect of Rous sarcoma on endocrine organs of cocks and hens, **3289**; textbook of endocrinology, **3780**.
See also Adrenal Gland; Adrenocorticotrophic Hormone (A.C.T.H.); Books, endocrinology; Cholesterol; Genital System, semen and spermatozoa; Lactation; Pituitary Gland; Pregnancy; Sex; Sex Hormones; Thymus; Thyroid Gland.
ENDOMETRITIS. See Genital System, diseases.
ENHEPTIN. In blackhead, **348** and **2880**.
ENTAMOEBA HISTOLYTICA. See Amoeba.
ENTERITIS. See Digestive System, diseases.
ENTEROCOCCI. See Streptococci.
ENTEROHEPATITIS. See Histomonas Meleagridis Infection [Blackhead].
ENTEROTOXAEMIA. Sulphamethazine in enterotoxaemia of goats, **324**; in Australia, **3412**; in U.S.A., **3426**.
ENZOOTIC ABORTION OF SHEEP. See Psittacosis-Lymphogranuloma Group.
ENZOOTIC STERILITY. See Vibrio Fetus Infection.
ENZYMES. Serologcial demonstration of toxic insoluble enzymes, **500**; action of suramin and antrycide on, **835**; proteolytic enzyme system of blood, **847**; enzyme treatment of sputum for isolation of tubercle bacilli, **925**; isolation of myofibrils by enzymatic method, **1170**; biotin coenzyme, **1829**; nomenclature of transferring enzymes, **2133**; inactivation of serum gonadotrophin, **2135**; effect of formalin fixation on activity of rat-liver enzymes, **2384**; receptor destroying enzyme of V. cholerae, **2813**; a lipolytic enzyme in reactive histiocytes of g. pigs with experimental encephalomyelitis, **3557**; heavy metal prosthetic groups and enzyme action, **3711**.
See also Aneurinase; Anticholinesterase; Beta-Glucuronidase; Catalase; Cholinesterase; Coagulase; Dehydrogenase; Desoxyribonuclease; Histaminase; Hyaluronidase; Hydrogenase; Lecithinase; Lipase; Lysozyme; Mesomucinase; Muscles; Nuclease; Nucleoproteins; Phosphatase; Renin; Streptodornase; Thiaminase; Thrombin.
EOMENACANTHUS STRAMINEUS. Virus of eastern equine encephalomyelitis isolated from Dermanyssus gallinae and E. stramineus, **81**.
EOSINOPENIA. See Blood, general.
EOSINOPHILIA. See Blood, general.
EPERYTHROZOON INFECTION. Neoarsphenamine in acute eperythrozoonosis of swine, **332**; E. suis and E. parvum, two new blood parasites of swine, **1672**; the infection in swine, **1996**; causing ictero-anaemia, **1997**; ictero-anaemia, eperythrozoonosis or anaplasmosis-like disease of swine proved to be caused by a virus, **2905**; account of the disease, **3536**.
EPHEDRINE. See Helvedrin.
EPIDERMIS. See Skin.
EPIDERMOPTES. E. bidobatus causing dermatitis in fowls in Uruguay, **3633**.
EPIDIDYMITIS. See Genital System, diseases.
EPILEPSY, CANINE. See Agene.
EPINEPHRINE. See Adrenal Gland, medullary hormones.
EPIPHYSIS. See Bones, fractures.
EPITHELIOMA. In the nasal sinuses in the horse, **1422**.
EPIZOOTIC LYMPHANGITIS. See Histoplasma Farciminosum Infection [Epizootic Lymphangitis].
EQUILIBRIUM. See Manganese.
EQUILIN. See Sex Hormones, oestrogens.
EQUISETUM. Poisons and Poisoning, plant poisoning.
ERGOT. See Claviceps.
ERITREA. See Brucella Infection, immunology; Cysticercus.
ERYSIPELOTHRIX [LISTERIA] MONOCYTOGENES INFECTION. In a dog, **26**; from a canary in Alberta, **1931**; augmenting action of lecithin and lipoids of L. monocytogenes in antibody production, **2297**; in fowls, **2499**; in Michigan, **2837**; reaction of blood cells in experimental listeriosis of sheep, **2838**.
ERYSIPELOTHRIX RHUSIOPATHIAE INFECTION.
Immunology. Vaccination of pigs, **25**; anaphylaxis in pigs immunized against swine erysipelas, **1031**; killed vaccine, **1271**; immunizing capacity of Swedish avirulent vaccine, **1615**; Traub's method, **1616**; aluminium gel vaccine, **2045**; vaccination, **2498**; immunization of turkeys, **3158**; Staub's vaccine, **3474**; preparation and testing of adsorbate vaccine, **3475**.
In Sheep. Corynebacterium ovis arthritis in lambs, differentiation from E. rhusiopathiae arthritis, **24**; causing polyarthritis in lambs, **939**; erysipelas of swine, sheep and turkeys, **941**.
In Swine [Swine Erysipelas]. Resistance to swine erysipelas, **940**; erysipelas of swine, sheep and turkeys, **941**; in Yugoslavia, **2205**; in Netherlands, **2458**; chronic form causing lesions in the myocardium, **2496**; artificial infection, **2497**; and periarteritis nodosa in pigs, **2661**; in Holland, **2782**; a summary of literature, **2836**; in Australia, **3412** and **3471**; in Malta, **3414**; S. calcitrans transmitting swine erysipelas, **3472-3473**; in Norway, **3770-3771**.
See also Erysipelothrix Rhusiopathiae Infection, immunology.
Treatment. Effect of penicillin and aureomycin, **1614**.
In Turkeys. Erysipelas of swine, sheep and turkeys, **941**; immunization with avirulent live culture, **3158**.
ERYTHROCYTES. See Blood, corpuscles [red].
ERYTHROCYTOSIS. See Blood, diseases.
ESCHERICHIA COLI. See Bacterium Coli.
ETHER. See Anaesthesia and Analgesia.
ETHIOPIA. See Diseases, General.
ETHYL CHLORIDE. See Anaesthesia.
ETHYLENE GLYCOL. See Technique and Apparatus, staining.
ETHYLENE OXIDE. Inactivation of viruses by, **1023**; for sterilization of hospital equipment, **1821**.
EUGLOBULIN. See Globulins.
EUPHORBIA INGENSE. See Poisons and Poisoning, plant poisoning.
EURYTREMA PANCREATICUM. Life history, **2933**.
"EXCESSIVE DOSE" PHENOMENON. See Bacteriophage.
EYES.
General. Intra-ocular transplantation of heterologous tissues, **468**; corneal metabolism and growth, **1423**; the naso-lachrymal duct in the goat, **1828**; innervation of cornea, **2143**; fundus of the eye in the horse, **3033**.
See also Heredity; Pregnancy, diagnosis.
Diseases. Night blindness in dogs, **595**; conjunctivitis in man by Newcastle disease virus, **735**; Kerato—conjunctivitis in sheep and cattle, **741**; penicillin ointment in conjunctivitis of dogs, **815**; physiology and pathology of the nictitating membrane, **863**; infectious keratitis in cattle, **1101**; effect of A.C.T.H. and cortisone in hypersensitive eye diseases, **1146-1147**; uveitis in a Cantonese caused by Gnathostoma spinigerum, **1747**; hereditary aspect of eye cancer in Hereford cattle, **1750**; avian keratoconjunctivitis caused by ammonia vapour, **1795**; relation of pleuro-pneumonia-like organisms to conjunctival changes in mice, **1980**; uveitis caused by a bovine Leptospira in Israel, **2252**; experimental nystagmus in kittens, **2362**; an infectious conjunctivitis of horses in Finland, **2655**; infectious kerato-conjunctivitis in cattle in Switzerland, **2657**; incidence and treatment of eye diseases in dogs, especially conjunctivitis, **3318**; in Zanzibar, **3419**.
See also Newcastle Disease, general; Ophthalmia, Periodic; Oxyspirura; Thelazia; Rickettsia Infection, in goats.
EYE WORMS. See Eyes, diseases; Oxyspirura; Thelazia.

F

FAECES. Examination of bovine faeces for acid-fast bacilli, **888**; androgenic factor in cow manure, **1172**; methods used in separation of urine from faeces in cattle, **1870**.
See also Eggs, Helminth; Salmonella Group; Viruses, neurotropic.
FALKLAND ISLANDS. See Reports, Falkland Islands.
FARMING. See Books, miscellaneous.
FARRIERY. See Zootechny.
FASCIOLA. In horses in Colombia, **435**; snail hosts in Britain, **762**; distomatosis in cattle, **1045**; lifecycle of F. hepatica and of L. truncatula, **1734**; life history in Venezuela, **2058**; in Kenya, **2456**; toxicity and histamine content, **2637**; in unweaned calves, **3268**; in U.S.A., **3429**; effect of organic dyestuffs, on F. hepatica, **3634**.
FAT. Carcinogens from skin fats, **457**; action of microorganisms on fats, **857**; histochemical relationship between peroxidation and yellow brown pigment in adipose tissue of vitamin E deficient rats, **1161**; toxic effect on rats of "ratanjot", a dye prepared from Onosma echioides **1804**; effect of high fat diet on joints of aging mice, **2322**.
See also Cholesterol; Fatty Acids; Lipaemia; Milk and Milk Products, chemical composition; Nutrition; Preen Gland; "Yellow Fat" Disease.
FATAL SYNCOPE. See Syncope, Fatal, In Pigs.
FATIGUE. Effect on pH and bacterial contamination of meat, **2158**; effect on quality of bacon, **2159**; rapid testing of beef for "fatigue fever", **2737**.
FATTY ACIDS. Of buffalo colostrum fat, **548**; indentification in the peripheral blood and in the rumen of cattle, **3348**.

FAVUS. Treatment with quaternary ammonium compounds, 980.
FEATHERS. Abnormal feathering in ducks after feeding amino-acids, 798; abnormal feather germ organization in Rhode Island Reds, 3320.
"FEBRILAT." An agent for producing artificial fever, 2684.
FEMUR. See Bones, fractures.
FERMENTATION. See Digestive System, ruminant digestion.
FERRETS. Effect of light on reproduction, 2174; treatment of S. typhi-murium infection in ferrets, 1629.
See also Clostridium Botulinum Intoxication [Botulism]; Influenza, general; Neoplasms; Newcastle Disease.
FERTILITY. Influence of time of insemination on conception, 582; of Friesian bulls, 592; semen characters and fertility, 1195; effect of bacteria, 1196; and hyaluronidase, 1197; delayed breeding and fertility of beef heifers, 1542; influence of time of service on conception rate in mares, 1860; of diluted bull semen containing streptomycin, 1862; in thoroughbred mares, 1867; nature of reproductive failures in low fertility cows, 2749; herd fertility in cattle, 3747.
See also Genital System, semen and spermatozoa; Insemination, Artificial; Reproduction; Sterility; Vitamins, vitamin A.
FERTILIZERS. Efficient use of, 2164.
FEULGEN REACTION. In diagnosis of smallpox, 714; aldehyde reaction in relation to the Feulgen technique, 2449.
FEVER, BOVINE MALIGNANT CATARRHAL. See Catarrh, Bovine Malignant.
FIBRINOGEN. See Blood, coagulation.
FIBROSIS. See Liver, diseases.
"FIEVRE BOUTONNEUSE." See Rickettsia Conori.
FIJI. See Diseases, General; Reports, Fiji.
FILARIASIS. Guinea-worm infection in a dog in Texas, 125; hetrazan in the treatment of Dirofilara immitis in a dog, 126; Thelazia in the conjunctiva of cattle, 127; treatment of F. loa and F. perstans in man, 450; recent work on filariasis, 771; treatment of Wuchereria bancrofti infection in Tahiti, 772; life cycle of thelazia rhodesii, 1051; hetrazan treatment in dogs, 2068; treatment in dogs, 2949; diagnosis of filarial dermatosis in sheep, 3282; periodicity of D. immitis, 3647.
See also Dipetalonema; Filaroides Osleri; Litomosoides; Onchocerca.
FILAROIDES OSLERI. In a greyhound in Australia, 3646.
FILIX MAS. Effect on tapeworms, 2626.
FILMS, INSTRUCTIONAL. I.C.I. film catalogue, 3409.
FINANTOL. See Disinfectants, Antiseptics and Sterilization.
FINLAND. See Brucella Infection, treatment and control; Eimeria Infection [Coccidiosis], in cattle; Eyes, diseases; Mycobacterium Tuberculosis Infection, in cattle; Oestridae, Hypoderma.
FIRST AID. See Books, miscellaneous.
FISH MEAL. See Nutrition, poultry.
"FISTULOUS WITHERS." See Onchocerca.
FLAYING. See Zootechny.
FLEAS. See Echidnophaga Gallinacea; Leptopsylla Segnis.
FLIES. See Blowflies and Fleshflies; D.D.T.; Dermatobia; Fly Strike; Glossina; Hippobosca; House-Flies; Lyperosia; Melophagus; Musca Convexifrons; Myiasis; Oestridae; Stomoxys; Tabanus.
FLUID, CEREBROSPINAL. See Nervous System, cerebrospinal fluid.
FLUORESCENCE. See Technique and Apparatus, staining.
FLUORINE. See Poisons and Poisoning.
FLUOROACETATE. Rodenticides, 1186.
See also Poisons and Poisoning.
FLUOROMICROSCOPY. See Technique and Apparatus, microscopy.
FOALS. See Anatomy; Horses; Youngstock, Diseases.
FODDER. See Acacia; Clostridium Botulinum Intoxication [Botulism]; Nutrition, general; Poisons and Poisoning, plant poisoning.
FOETUS. Hydrops of foetus, 168; lymphoid leucosis in a calf foetus, 774; selective admission of antibodies in rabbit foetus by yolk-sac splanchnopleur, 1028; foetal adrenals in maternal toxaemias, 1519; malformation of foetus after prolonged pregnancy ["bulldog" calf], 1546; foetal death and maldevelopment from maternal vitamin A deficiency, 1771; determination of age of bovine foetuses, 1853; embryology of the rabbit vagina, 2403; growth of digestive system in dog foetus, 3720.
See also Anatomy; Blood, chemical composition; Blood, haemoglobin; Elephants; Foot and Mouth Disease, virus; Immunology, maternal transfer; Insemination, Artificial, in cattle; Virus Abortion; Vitamins, vitamin A; vitamin C.
FOG FEVER. Physiological dysfunctions and metabolic disorders, including fog fever, 2975.
FOLIC ACID. See Vitamins, vitamin B complex.
FOOD AND AGRICULTURAL ORGANISATION. See Organisations, International.
FOOD HYGIENE.
General. Salmonella in shellfish from rivers polluted by duck farm waste, 232; S. typhi-murium in hens' eggs, 955; bacteriological examination and grading of ice-cream, 1181; mould rot in eggs, 1183; epidemic of typhoid fever due to ice-cream, 1628; viability of tubercle bacilli in cheese, 2161; examination of meat, blood, fat and fish, 3060.
See also p-Aminobenzoic Acid; Books, public health; Dyes.
Food Poisoning [in man]. Botulism after eating pickled herring, 49; Staph. aureus food poisoning in Khartoum, 230; S. typhi infection transmitted by butter, 654; S. typhi-murium food poisoning from duck eggs, 956; Salmonella food poisoning in England and Wales, 1184; Salmonella meat poisoning in a hospital, 1185; caused by S. breslau, 1278; in England and Wales, 1526; coagulase test in the study of food poisoning staphylococci, 1577; epidemic of typhoid fever due to ice-cream, 1628; S. typhi-murium infection in duck eggs as cause, 1942; from duck eggs infected with S. typhi-murium, 2242; sterilization of Salmonella infected meat by boiling, 2738; a case of S. typhi-murium food poisoning by meat, 2739; Staph. enterotoxins in canned mackerel, 3061; staphylococcal, after ingestion of pork sausage, 3064.
Meat Inspection. S. typhi-murium from beef carcass, 227; benzene hexachloride in pork, 228; bacteriology of dried whale meat, 229; in Union of South Africa, 275, 276 and 899; guide, Trichinella inspection, 291; downgrading of carcasses because of TB., 573; weight losses in slaughter stock during transit, 575; incidence of TB. in slaughter cattle, 637; dropsical meat, 866; inspection of meat infected with Leptospira, 1182; salmonellosis in live and slaughtered animals, 1624; salmonellosis in slaughter animals, 1625-1626; toxicity of flesh of quails after ingestion of seeds of hemlock [Conium maculatum] or Oenanthe crocata, 1803; the Cattle Slaughtering and Diseased Animals and Meat Act, 1852; relation of fatigue to pH and bacterial contamination of meat, 2158; effect of fatigue on quality of bacon, 2159; serological diagnosis of salmonellosis at meat inspection, 2160; contamination by insecticides, 2408; chemical agents for control of moulds on meat, 2409; specificity of camel antiserum, 2604; history of cattle and meat inspection in Styria, 2735; rapid testing of beef for "fatigue fever", 2737; S. paratyphi B from pork, 3485; role of veterinary surgeon in whaling industry, 3729.
See also Caponization; Cysticercus; Food Hygiene, general; Law, Holland; Trichinella Infection.
Milk Inspection. Bacteriological testing of milk, 571; regulations relating to milk, 1178; examination of milking utensils by the swab method, 1180; bacteriological and hygienic evaluation of pasteurized and irradiated milk in Hesse, 1851; direct culture method for examination of milk samples, 1872; rapid abnormality indicator for milk, 2182; provision of safe, high quality milk, 2406; standard methods for examination of dairy products, 2734.
See also Milk and Milk Products.
FOOD POISONING. See Food Hygiene, food poisoning [in man].
FOOT. Myiasis of the hoof in cattle in North Celebes, 1725; diseases of the hoof in horses and cattle, 2794; difference in strength of light and dark hooves in horses, 3055.
FOOT AND MOUTH DISEASE.
General. Rhode Island laboratory, 70; in French Indo-China, 704; development of lesions, 705; temperature reaction in cattle, 706; blood catalase in experimentally infected cattle, 1004; panting in cattle, a sequel to F. & M. disease, 1092; in Nigeria, 1237; in Bechuanaland Protectorate, 1239; differential diagnosis, 1334; susceptibility of armadillo, 1673; in Kenya, 2456; in Denmark, 2459; in Germany, 2460; blood catalase in experimentally infected cattle, 2567; in Swaziland, 2770; in Bechuanaland, 2772-2773; collected reprints of the Veterinary Research Institute, Riems, 3104; recent investigations, 3205; lesions on corium and lingual muscles, 3209; factors influencing development of lesions, 3210; in Malta, 3414; role of carriers, 3537; experimental infection in puppies, 3540; in Norway, 3770-3771; in Sweden, 3772.
Control. In Mexico, 357-359; Sweden, 902; the Argentine, 3538-3539.
See also Foot nd Mouth Disease, immunology.
Immunology. Frozen antigens for complement-fixation test, 360; preparation of vaccine in Belgium, 361; vaccine production in Switzerland, 362; production of vaccine in Denmark, 1005; immunization, 1335; conference on production of vaccines, 1336; Schmidt-Waldmann type vaccine, 1337; preparation of vaccine in Denmark, 1338; storage of vaccine at various temperatures, 1999; immunological variants of types A and B, 2564; complement-fixation test in immune cattle in the diagnosis of type, 2565; demonstration of antibodies in serum of immune cattle by complement-fixation test, 2566; the Riems adsorbate vaccine, 2888; complement-

FOOT AND MOUTH DISEASE—Immunology—[cont'd.]
fixation test for typing, **3206**; cross-immunity tests for typing, **3207**; dose of Waldmann vaccine, **3211**; official test of Belin vaccine, **3212**; combination of virus, albumen and protamine, **3213**; fractionation by ultra centrifuge of g. pig lymph into infectious and complement fixing components, **3541**; safety and efficiency of vaccines, **3542**; Belin F. & M. disease vaccine investigating Committee, **3543**.
See also Foot and Mouth Disease, control, virus.
Virus. Type "O" virus in Mexico, **359**; cultivation on chick embryo, **707**; preservation in glycerin, Vallée's medium and by freezing, **708**; cultivation on ox-tongue epithelial tissue, **1339**; the Normandy strain, **1998**; mass cultivation in a bovine foetus, **2568**; influence of chemicals present in suspensions on activity, **2887**; complement-fixation test for typing, **3206**; cross immunity tests for typing, **3207**; strains with natural adaptation to swine, **3208**.
See also Foot and Mouth Disease, immunology.
FOOT ROT. See Fusiformis Nodosus Infection [Foot Rot].
FORAGE. See Nutrition, sheep.
FOREIGN BODIES. See Circulatory System, diseases; Digestive System, diseases.
FORMALDEHYDE. Resistance of Newcastle disease virus to fumigation with, **90**; for hatchery fumigation against Newcastle disease, **1374**.
See also Arthritis; Bacteria, General.
FORMALIN. Action on antigens, **421**; serum-formalin test in sleeping sickness, **1986**; effect of fixation on activity of five rat-liver enzymes, **2384**; treatment of epizootic lymphangitis, **2857**.
See also Disinfectants, Antiseptics and Sterilization.
FORMOL. See Formalin.
FORMOL GEL REACTION. Mechanism of the Gros titration and formolgel reaction, **2192**; diagnosis of leishmaniasis in dogs in Algeria, **2879**.
FOWL CHOLERA. See Pasteurella Infection, avian.
FOWL CORYZA. See Haemophilus Gallinarum Infection [Avian Coryza].
FOWL DIPHTHERIA. See Pox Diseases, fowl pox.
FOWL PARALYSIS AND AVIAN LEUCOSIS. Transmission via the egg, **128**; relationship between sarcoma and leucosis, **462**; control and prevention, **788**; 23rd Annual Report, Agricultural Research Institute, Hillsborough, Northern Ireland, **1229**; treatment with potassium iodide, **2071**; in St. Kitts-Nevis, **2198**; particular component of plasma from fowls with avian erythro-myeloblastic leucosis, **2316**; active immunization against fowl leucaemia, **2640**; in U.S.A., **2786**; studies on avian leucosis complex, **2959**; control, **3290**; in U.S.A., **3426**; research at East Lansing, **3427**; age disposition of White Leghorn hens to visceral lymphomatosis, **3663**; lymphoid tissue and its relation to normal lymphoid foci and to lymphomatosis, **3664**; in U.S.A., **3773**.
FOWL PEST. See Fowl Plague; Newcastle Disease.
FOWL PLAGUE. And Newcastle disease, in France, **86**; in Algeria, **385**; electron microscopy of filamentous forms of influenza and fowl plague viruses, **1359**; vaccination, **1368** and **2027**; and Newcastle disease in France, **1372**; in Yugoslavia, **2205**; comparative studies of the viruses of fowl plague and Newcastle disease, **2913**; in Turkey, identified as Newcastle disease, **3239**; in Sierra Leone, **3422**; phase-contrast and electron microscopical study of intracellular growth of the virus, **3585**; haemaglutination-inhibition in differentiation from Newcastle disease, **3586**; relation of virus N to fowl plague, **3587**.
See also Duck Plague; Newcastle Disease.
FOWL POX. See Pox Diseases, fowl pox.
FOWL SARCOMA. See Neoplasms, general.
FOWL TYPHOID. See Salmonella Gallinarum Infection.
FOWLER'S SOLUTION. See Poisons and Poisoning.
FOWLS.
General. Principles and practice of poultry nutrition, **144**; commercial remedies, **515**; aureomycin and growth of chicks, **519**; influence of thyroprotein treatment of hens on length of incubation and thyroid size of chicks, **797**; respiratory metabolism in poultry, **1162**; survival of day-old chicks under high altitude transport conditions, **1548**; temperature, oxygen and carbon dioxide inside chicken boxes at various room temperatures, **1549**; use of chicks for evaluation of antituberculous agents, **1595**; an unknown (? virus) fowl disease in Holland, **1783**; avian keratoconjunctivitis caused by ammonia vapours, **1795**.
See also Books, diseases, general; Caponization; Cholesterol; Circulatory System, diseases; Digestive System, general; flora and fauna; Eggs, Hen; Embryos, Fowl; Feathers; Genital System, semen and spermatozoa; Glutamic Acid; Hepatitis, infective in man; Heredity, lethal factors; Metabolism; Neoplasms; Nutrition, poultry; Poisons and Poisoning; Preen Gland; Sex Hormones, oestrogens; Sulphonamides, sulphaquinoxaline; Temperature, environmental; Thiouracil; Vitamins, vitamin B_{12}, vitamin D.
Arthropod Parasites. See Benzene Hexachloride; Cnemidocoptes; Echidnophaga Gallinacea; Epidermoptes; Lice; Mites; Parasiticides, general.
Bacterial Diseases. See Brucella Infection, in fowls; Clostridium Botulinum Intoxication [Botulism]; Clostridium Infection, in fowls; Erysipelothrix [Listeria] Monocytogenes Infection; Haemophilus Gallinarum Infection [Avian Coryza]; Mycobacterium Tuberculosis Infection, in poultry.
See also Pasteurella Infection, in fowls; Salmonella Abortus-Equi Infection; Salmonella Gallinarum Infection [Fowl Typhoid]; Salmonella Ness-Ziona; Salmonella Pullorum Infection; Salmonella Thompson.
Helminth Parasites. Sterilization of land against poultry parasites, **1724**.
See also Acuaria; Ascarids; Heterakis; Oxyspirura; Syngamus.
Protozoan Diseases. Quaternary ammonium compounds in prevention of protozoan diseases in fowls, pigeons and turkeys, **63**; sterilization of land against poultry parasites, **1724**.
See also Eimeria Infection [Coccidiosis], avian; Haemoproteus Infection; Histomonas Meleagridis Infection, [Blackhead]; Leucocytozoon Infection; Plasmodium Infection [Malaria], avian.
Virus Diseases. Growth pattern of respiratory disease virus, **391**; an unknown (? virus) fowl disease in Holland, **1783**.
See also Bronchitis, Infectious; Fowl Plague; Hepatitis, infective in man; Laryngo-Tracheitis, Infectious; Leucosis, Avian; Newcastle Disease; Pox Diseases, fowl pox; Psittacosis; Sinusitis, Infectious, of Turkeys.
FOXES. S. enteritidis infection in silver foxes, **1276**; spirocercosis in a silver fox, **2636**.
See also Clostridium Botulinum Intoxication [Botulism]; Rabies, in wild animals; Rickettsia Infection, in dogs; Salmonella Typhi-Murium.
FOXGLOVE. See Poisons and Poisoning, plant poisoning.
FRACTURES. See Bones, fractures.
FRANCE. See Brucella Tularensis Infection [Tularaemia]; Foot and Mouth Disease, immunology; Fowl Plague; Leishmania Infection, general; Leptospira Pomona; Mycobacterium Tuberculosis Infection, immunology (BCG); Neoplasms, venereal; Newcastle Disease; Phenothiazine; Rickettsia Infection, Q fever.
FRANCIS PHENOMENON. See Influenza, immunology.
FREEZE-DRYING. A simple method of lyophilizing micro-organisms, **887**; lyophilized blood for immunization of cattle against piroplasmosis, **1002**; transmission of mouse sarcoma with lyophilized tumour tissues, **1065**; recovery of viable micro-organisms and viruses from vapours of materials during lyophilization, **1226**; revival of freeze-dried spermatozoa, **1864**; preservation of V. fetus, **1952**; for preservation of stock culures of M. tuberculosis, **2180**; freezing and desiccation of mouse tumours, **2954**; cultivation in vitro of frozen and desiccated mouse tumour tissue, **2955**; properties of freeze-dried B.C.G., **3152**.
See also Brucella Infection, immunology.
FREEZING. Of whole blood, **891**; arteriosclerotic lesions induced in the aorta of rabbits by freezing, **1467**; recovery of red blood corpuscles after freezing, **2391**; in vitro survival of rabbit's red cells recovered after freezing, **3761**.
FRENCH EQUATORIAL AFRICA. See Rickettsia Infection, general; Ticks, Ixodidae.
FRENCH GUIANA AND ININI. See Hylesia; Reports, French Guiana and Inini.
FRENCH INDO-CHINA. See Buffaloes; Foot and Mouth Disease, general; Rabies, treatment and control; Sporotridium Infection; Trypanosoma Evansi Infection [Surra]; Vitamins, vitamin B_1.
FRENCH SUDAN. See Rickettsia Infection, general; Rinderpest, immunology.
FRENCH WEST AFRICA. See Squirrels; Trypanosoma Infection, in man.
FRIEDLANDER'S BACILLUS. See Klebsiella.
FRIGHT DISEASE. See Hysteria, Canine.
FROGS. See Pregnancy, diagnosis.
FRUCTOSE. See Genital System, semen and spermatozoa.
FUMIGATION. See Disinfectants, Antiseptics and Sterilization.
FUNGI. Fungous diseases of animals, **672** and **974**; treatment of superficial mycosis, **981**; fungistatic activity of vitamin K on dermatophytes, **983**; hanging-drop preparation as a routine method for culturing material from fungous diseases, **1213**; list of fungi pathogenic for man and animals in Britain, **1289**; fungi and fungous diseases, **1290**; nomenclature of pathogenic fungi, **1647**; serological relationship of fungi, **1648**; poisoning of ducklings, **1802**; dermatophytoses in Great Britain, **1962**; a stain for demonstration of fungi in animal tissue, **2442**; a stain for diagnosis of fungous diseases, **2443**; preservation by desiccation, **2444**; method for preparation of permanent slides of fungous cultures, **2445**; propagation of pathogenic fungi in yolk sac of embryonated eggs, **2861**; preparation of fungous antigens for immunization and sero-

FUNGI—[cont'd.]
logical reactions, **2862**; DINR. 49-1 (fungicin) an antibiotic produced by B. subtilis, against pathogenic fungi, **3017**; mycological problems in deterioration of military equipment, **3105**; Candida and Aspergillus endocarditis and role of antibodies in dissemination of fungous disease, **3180**; survey of mycological literature, **3182**; mycosis of sheep in Uruguay, **3503**.
See also Absidia Lichtheimi; Actinomyces Infection; Antibiotics, fungous products; Aspergillus; Blastomyces Dermatitidis; Books, fungi; Candida; Coccidioides Infection; Committees, Conferences and Congresses; Favus; Fungicides; Histoplasma Infection; Histoplasma Farciminosum Infection [Epizootic Lymphangitis]; Moulds; Rhinosporidium; Ringworm; Spicaria; Sporotrichium Infection; Trichophyton; Yeasts.
FUNGICIDES. Evaluation of fungicides, **1820**; evaluation of water soluble fungicides against Trichophyton, **2183**; chemical agents for control of moulds on meat, **2409**.
See also Antibiotics, bacterial products.
FUNGOCIN. Antibiotics, bacterial products.
FURADROXYL. Antibacterial action of neomycin and furadroxyl, **520**.
FUSIFORMIS NECROPHORUS INFECTION.
In calves. Sulphamethazine in calf diphtheria, **1646**; in U.S.A., **3426**.
FUSIFORMIS NODOSUS INFECTION [FOOT ROT].
In sheep. In Italy, **50**; in Denmark, **2459**.
In swine. In New Zealand, **2855**.

G

GALBA. See Limnaea.
GAMBIA COLONY. See Reports, Gambia.
GAME. See Diseases, General; Trypanosoma Infection, treatment and control; Wild Animals and Birds.
GAMMA GLOBULIN. See Globulins.
GAMMEXANE. See Benzene Hexachloride.
GAPEWORMS. See Syngamus.
GASES, POISONOUS. Sewer gas poisoning in a horse, **1116**.
See also Lewisite; Mustard Gas.
GASTRITIS/PERICARDITIS, TRAUMATIC. See Digestive System, diseases.
GASTRO-ENTERITIS. See Digestive System, diseases.
GASTROPHILUS. See Oestridae, Gastrophilus.
GEELDIKKOP. See Photosensitization.
GEESE. Losses in geese, ducks and fowls by a toxin similar to Clostridium botulinum toxin, **326**.
See also Vitamins, vitamin D.
GENERAL ADAPTATION SYNDROME. A treatise by Selye, H., **3115**.
GENETICS. See Bacteria, General; Heredity.
GENITAL SYSTEM.
General. Effect of dicthylstilboestrol dipropionate on postpartum changes in the cow, **245**; hyaluronidase and fertilization of rabbit ova, **849**; incidence of female genital abnormalities in swine, **1545**; sex hormones and sexual cycle, **1866**; bacterial flora of the bovine male genitalia, **2092**; effect of menstrual cycle and pregnancy on human cervical secretions, **2150**; ketosteroids in the amniotic fluid, **2169**; effect of amphenone "B", **2379**; endometrial biopsy in the study of infertility, **3383**.
See also Books, endocrinology; Brucella Infection, immunology; Hermaphroditism; Insemination, Artificial; Parturition; Reproduction; Sex.
Corpus Luteum. Use of corpora lutea for determination of ovulation incidence in white-tailed deer, **1515**.
Diseases. Biotin deficiency causing cryptorchidism in rats, **155**; artificial insemination in control of dourine, trichomoniasis, epididymitis and vaginitis, **238**; contagious epididymitis and vaginitis in the Union of South Africa, **276**; cystic glandular dysplasia in the ovine endometrium, **876**; artificial insemination for control of venereal diseases in cattle, **1192**; diagnostic tests in bovine venereal diseases, **1193**; causation and treatment of sterility, **1198**; prophylaxis against venereal diseases of cattle, **1494**; bovine endometritis, **1612**; contagious vaginitis in Sierra Leone, **2201**; primary TB. of the vulva in a cow, **2818**; cystic glandular hyperplasia after sterilization (ligation of cornua) in a bitch, **3394**.
See also Abortion; Brucella Infection; Neoplasms; Salmonella Abortus-Equi Infection [Equine Infectious Abortion]; Trichomonas Infection; Vibrio Fetus Infection.
Menstrual Cycle. Effect on human cervical secretions, **2150**; effect of α-tocopherol upon progestational proliferation in the rabbit, **2168**.
Oestrous Cycle. Anoestrus in grazing sheep and cattle due to nutrition, **147**; mucous plug in pregnancy and oestral secretion of the cow, **223**; oestrogen therapy and oestrous cycle in cows, **587**; sex stimulation in mares by pregnant mares' whole blood, **588**; effect of particle size of suspensions of oestrogen crystals on duration of oestrus, **1200**; most favourable time during oestrus for carrying out artificial insemination in cows, **1859**; sex hormones and sexual cycle, **1866**; early postpartum oestrus in thoroughbred mares, **1867**; cytology of vaginal secretion during oestrus in Sicilian goats, **2402**; induction in ewes using synthetic oestrogen, **2419-2420**; photoperiodicity in Suffolk sheep, **2435**; in mares, **2716**; in cattle, **3378**; morphology of the oviduct in virgin heifers in relation to oestrus cycle, **3739**.
Ovary, Oviduct and Ovulation. Ovarian transplanation in dogs, **243**; ovary-spleen transplantation in rats, effect of castration and pregnancy on tumour formation, **467**; role of hyaluronidase in fertilization of rabbit ova, **849**; ovulation in the rabbit following oestrogen-progesterone treatment, **877**; mammary growth in castrated mice grafted with anterior lobes of hypophyses and ovaries, **1425**; ovarian hormones and calcium metabolism, **1437**; use of corpora lutea for determination of ovulation incidence in white-tailed deer, **1515**; isolation of ova from living cows, **1865**; influence of sex glands on detoxication of pentobarbital by the liver, **2128**; microbial content and morphological character of the normal bovine uterus and oviduct, **2401**; studies on activation of rabbit ova, **2417**; growth of mammary gland in rats after gonadectomy and adrenalectomy, **2718**; iodine content of ovaries, in pregnant cows, **3047**; effect of sterile copulation on time of ovulation in dairy heifers, **3078**; experiments in interbreed transference of ova in sheep, **3079**; intra-ocular grafts of the ovary in spayed does and its use in pregnancy diagnosis, **3377**; morphology of the oviduct of virgin heifers in relation to oestrous cycle, **3739**; some pathological changes of the bovine oviduct, **3745**.
See also Eggs, Mammalian.
Placenta. Selective admission of antibodies in rabbit foetus by yolk-sac splanchnopleur, **1028**; metabolism of the human placenta, **1512**; placental changes in g. pigs following oestrogen treatment, **1537**; placental transmission of antibodies and serum gamma globulins, **2047**; implantation of the ovum and development of the placenta in the sow, **3048**.
Semen and Spermatozoa. Mammary tumour-agent in mouse semen, **131**; motility of bovine spermatozoa, **239**; motility of spermatozoa and control of bacteria in semen extenders, **240**; fertility of bovine semen in extenders containing sulphanilamide and antibiotics, **241**; metabolism and fertilizing ability of bull semen and spermatozoa, **242**; proteins of boar and ram spermatozoa, **566**; effect of androgen on spermatogenesis, **567**; fertility of Friesian bulls, **592**; low temperature storage of bull, ram and rabbit spermatozoa, **872**; fertility and viability of bull semen dilutions, **873**; pregnenolone and spermatogenesis of hypophysectomized rats, **878**; motility of bovine semen in extenders containing sulphanilamide and antibiotics, **1194**; semen characters and fertility, **1195**; effect of bacteria on fertility of bovine semen, **1196**; hyaluronidase concentration and fertility of bull semen, **1197**; metabolism of ejaculated bull spermatozoa, **1514**; ram semen evaluation, **1517**; toxicity of rubber for bull spermatozoa, **1533**; metabolism of spermatozoa, **1534**; spermatolysis a cause of male sterility, **1540**; fertility of diluted bull semen containing streptomycin, **1862**; study of bull semen, **1863**; revival of freeze-dried spermatozoa, **1864**; evaluation of bull semen and artificial insemination, **1900**; antigenic relationship of mammalian spermatozoa, **2043**; semen of the Thoroughbred, **2412**; electrical measurement of bull semen activity, **2413**; determination of numbers of spermatozoa in bull semen by measurement of light transmission, **2414**; differential staining for live and dead spermatozoa, **2415**; relation of ram semen concentration and volume to fructose content, fructolysis and methylene blue reduction time, **2416**; effect of oestrogen and androgen on spermatogenesis in birds, **2719**; effect of certain coal-tar dyes used for semen identification on livability and fertility of bull spermatozoa, **2748**; relationship of semen production to sexual excitement in dairy bulls, **3072**; studies on semen and fertility in bulls, **3073**; viability of bull spermatozoa in storage media, **3074**; effect of hyaluronidase and hyaluronic acid on motility, **3075**; sedimentation of spermatozoa, settling of diluter solids and effects on survival during storage, **3076**; structure of ram spermatozoa, **3372**; excentric implantation of the tail in bull spermatozoa in relation to fertility, **3373**; fructolysis in buffalo semen, **3374**; staining technique for study of temperature-shock in semen, **3375**; examination of cock's semen, **3376**; relationship between percentage of live spermatozoa and motility, longevity and fertility of bull semen, **3734**; effect of antibiotics on livability and control of bacteria in bull semen, **3735**; toxicity of penicillin, streptomycin, aureomycin and chloromycetin to bull spermatozoa, **3736**; chemical composition of bovine spermatozoa, **3737**.
Testes. Sterility in bulls, **593**; the normal testis in man, **1171**; action of human chorionic gonadotrophin on

GENITAL SYSTEM—Testes—[cont'd.]
adrenals and testicles of hypophysectomized immature rats, **1538**; influence of sex glands on detoxication of pentobarbital by the liver, **2128**; effect of X-ray on testis, **2315**; changes in cell morphology and histochemistry of the testis following irradiation, **2452**; intra-testicular temperatures in Merino rams, **3049**.
See also Cholesterol.
Uterus. Viscosity of cervical mucus and pregnancy diagnosis in cows, **585**; cystic glandular dysplasia in the ovine endometrium, **876**; external hysterography in the study of uterine activity, **1511**; response of human cervix and corpus uteri to drugs in early pregnancy, **2116**; intrauterine antibiotic treatment of vibrionic sterility in dairy cows, **2248**; uterine and vaginal changes in vitamin E deficient rats, **2336**; microbial content and morphological character of the normal bovine uterus and oviduct, **2401**; effect of oestrogen and progesterone on arterial system of uterus in cows, **3742**.
See also Genital System, diseases; Magnesium Salts; Pigments; Sex Hormones, oestrogens; Vitamins, vitamin B_{12}.
Vagina. Uterine and vaginal changes in vitamin E deficient rats, **2336**; cytology of vaginal secretion during oestrus in Sicilian goats, **2402**; embryology of the rabbit vagina, **2403**; formation of lactic acid in the vagina of rats, **3343**.
See also Genital System, diseases.
Vulva. See Genital System, diseases.
GEOPELIA STRIATA. See Newcastle Disease, immunology.
GEORGINA RIVER DISEASE. Reports, Australia, **272**, **273**, **274** and **3412**.
GERMANY. See Army Veterinary Services; Brucella Infection, in swine; Dictyocaulus; Foot and Mouth Disease, general; Leptospira Infection, in man from animals; Milk and Milk Products, bacterial content; Public Health; Rabies, general; Reports, Germany; Research Institutes, Germany; Rickettsia Infection, Q fever; Sheep Scab; Trichomonas Infection in cattle; Youngstock, Diseases.
GESTATION. See Pregnancy.
GIARDIA. In dogs treated with atebrin, **345**.
GLANDERS. See Pfeifferella Mallei Infection [Glanders].
GLASSER'S DISEASE. In Australia, **3412**.
GLIOTOXIN. Tuberculostatic activity of blood and urine from animals given gliotoxin, **413**.
GLOBULINS. Neutralization of vaccinia virus by gamma globulin, **1007**; serum globulins and immunity, **1029**; binding of blood serum gamma globulin by sulphadiazine, **1487**; purification of the bovine gamma globulin factor which suppresses variation in Br. abortus, **1632**; turbidimetric gamma globulin determinations in hepatobiliary diseases, **1787**; method used for assessment of euglobulin content of serum, **1883**; placental transmission of antibodies and serum gamma globulins, **2047**; antiglobulin technique applied to detection of non-agglutinating antibodies against S. typhi O in human sera, **2184**.
See also Milk and Milk Products, colostrum.
GLOMERULONEPHRITIS. See Kidneys, diseases.
GLORIOSA SUPERBA. See Poisons and Poisoning, plant poisoning.
GLOSSINA. Age grouping of tsetse flies, **106**; in relation to soil conservation, in the Belgian Congo, **107**; climate and activity of coastal Glossina spp. in Kenya, **108**; control by clearing of infested areas in French West Africa, **1304**; problem of tsetse flies, **1726**; persistance of D.D.T. crystals on cattle sprayed against G. palpalis, **2053**; in East Africa, **2457**; in relation to animal industry in S. Africa, **2608**; control of G. palpalis and G. morsitans in the Sudan, **2610**; in the Anglo-Egyptian Sudan, **2611**; survey and control in Kenya, **2612**; effect of high temperature on pupal stage in relation to transmission rate of trypanosomes, **2613**; in Swaziland, **2770**; attempted eradication in the Union of South Africa, **2927**; game, tsetse and trypanosomiasis control, **2928**; in Zanzibar, **3420**; G. palpalis and G. pallidipes, as vectors of trypanosomiasis, **3524**; climatic factors influencing behaviour of G. pallidipes, **3628**; tsetse for tyros, **3629**.
GLUCOPROTEINS. See Blood, general.
GLUCOSAN. See Sugar.
GLUCOSE. Uptake by tissues of glucose and acetic acid from the peripheral circulation, in sheep, **2077**; carbohydrate metabolism in cattle and intravenous glucose tolerance in healthy and diseased cows (including Ketosis), **2961**.
See also Ketosis.
β-GLUCURONIDASE. See Beta-Glucuronidase.
GLUTAMIC ACID. Pteroylglutamic acid studies in fowls, **482**; pteroylglutamic acid and reproduction in the rat, **483**; synthesis of glutamic acid and glutamyl polypeptide by B. anthracis, **1252**; pteroylglutamic acid deficiency in pigs, **3301**.
GLUTAMYL POLYPEPTIDE. Synthesis of glutamic acid and glutamyl polypeptide by B. anthracis, **1252**.
GLYCAEMIA. And reflex closure of the oesophageal groove, **556**.
See also Hypoglycaemia.
GLYCINE. Toxicity for vitamin B_{12} deficient chicks, **2963**.
GLYCOLYSIS. Neoplasms, general.
GNATHOSTOMA. Uveitis in man caused by G. spinigerum, **1747**.
GOATS. Feeding in a semi-arid area, **1069**; infection in kids resembling infective hepatitis, **1103**; diseases, **1461**; clinical aspects of goat diseases, **1462**; goitre and myxoedema of new-born goats, **2093**; productivity of crosses between local Yugoslav and Saanen goats, **2179**.
See also Agalactia, Contagious; Anatomy; Bacillus Anthracis Infection [Anthrax]; Brucella Infection, in goats; Enterotoxaemia; Genital System, oestrous cycle; Insemination, Artificial; Lactation; Lungworms; Mastitis, Bovine, streptococcal Infection; Phenothiazine; Poisons and Poisoning; Protozoa, General; Radiation Sickness; Rickettsia Infection; in goats; Rinderpest; Salmonella Dublin; Staphylococcus Infection Temperature, body; Trypanosoma Vivax Infection; Vibrio Fetus Infection; Vitamins, vitamin B_1.
GOITRE. And myxoedema in new-born goats, **2093**; role of synthetic goitrogens in animal production, **3755**.
GOLD. See Radioactive Isotopes.
GOLD COAST COLONY. See Reports, Gold Coast Colony.
GONADOTROPHINS. See Sex Hormones.
GONADS. See Genital System, ovary, testes.
GRANULATION TISSUE. Effect of hypophysis, thyroid, sex hormones and the adrenal cortex upon granulation tissue, **1177**.
GRANULOMA. Pulmonary granuloma in epizootic lymphangitis, **1294**; nasal granuloma in cattle, **3314**.
GRANULOMA, VENEREAL. See Neoplasms, venereal.
GRASS TETANY. Cholinesterase activity in grass tetany and puerperal paresis, **485**; in New Zealand, **3110**.
GRAZING. See Pastures and Grazing.
GREAT BRITAIN. See United Kingdom.
"GREY LUNG" VIRUS. Chemotherapeutic experiments, **3236**; relation of a virus from cotton rats to grey lung virus, **3237**.
GROBANTOL. See Disinfectants, Antiseptics and Sterilization.
GROS TITRATION. See Technique and Apparatus, immunological.
GROWTH. See Antibiotics, general; Astin M; Aureomycin; Bacteria, General; Copper; Manganese; Metabolism; Nutrition, general; Penicillin; Pituitary Gland, anterior hormones; Reproduction; Saliva; Thyroid Gland; Trace Elements; Vitamins, vitamin B_1 [Thiamine].
GUANINE. Effect of guanine analogue on lymphoid leucaemia of mice, **464**.
GUINEA FOWL. See Brucella Infection, in fowls.
GUINEA PIGS. Breeding of g. pigs, **257**; S. typhi-murium infection in, **949**; breeding without fresh green food, **2438**; a respiratory disease transmissible to man, **3235**.
See also Brucella Infection, general, treatment; Clover, Subterranean; Coccidioides Infection; Genital System; Horse-Sickness, African; Immunology, general; Mycobacterium Tuberculosis Infection, treatment, tuberculin test; Oedema, pulmonary; Penicillin; Pneumonia, virus; Respiratory System, diseases; Sex Hormones, oestrogens; Streptococcus Zooepidemicus; Trypanosoma Evansi Infection; Trypanosoma Vivax Infection.
GUINEA-WORMS. See Dracunculus.

H

HAEMAGGLUTINATION. See Immunology, agglutination [haemagglutination].
HAEMATOLOGY. See Blood, general.
HAEMATOPINUS. See Lice.
HAEMATOPOIESIS. See Blood, general.
HAEMATURIA. See Urinary System, diseases.
HAEMOGLOBIN. See Blood, haemoglobin.
HAEMOGLOBINURIA. Bovine haemoglobinuria, **1779**.
See also Myohaemoglobinuria, Paralytic.
HAEMOLYSINS. See Staphylococci.
HAEMOLYSIS. See Blood, general.
HAEMOLYTIC DISEASES. Haemolytic disease of newborn due to iso-immunization of pregnancy, **103**; composition of liquor amnii in haemolytic disease of newborn, **418**; significance of Rh factor in veterinary medicine, **1399**; diagnosis of haemolytic jaundice in mule foals, **1401**; in foals, **1402**; of newborn horse and mule foals, **1403**; icterus of newborn foals, **3259**.
See also Immunology, haemolytic disease.
HAEMOLYTIC JAUNDICE. See Haemolytic Diseases; Immunology, haemolytic disease.
HAEMOLYTIC STREPTOCOCCI. See Streptococci.

HAEMONCHUS. Significance of haemoglobin in H. contortus, **121**; resistance of sheep to H. contortus, **1048**; H. santomei in the abomasum of cattle, **1049**; studies on H. contortus in cattle, **1413**; H. contortus immunity experiments, **1417**; differentiation of eggs of H. contortus and Ostertagia species, **1418**; phenothiazine for infestation in lambs, **1743-1744**; parasitic gastro-enteritis in sheep, **2062**; immunological studies on resistance of sheep to infestation, **2310**; in camels treated with phenothiazine, **2311**; in sheep in Italy, **2937**; in Australia, **3412**; in Zanzibar, **3419**; in camels, **3625**.

HAEMOPHILUS GALLINARIUM INFECTION [AVIAN CORYZA]. Genetic variation in the resistance to respiratory infection in chickens, **1621**.

HAEMOPHILUS INFLUENZAE. Determination of inherited traits, **3161**.
See also Influenza.

HAEMOPHILUS PERTUSSIS. Effect of antihistaminics on mice hypersensitive to H. pertussis vaccine, **1484**; report, Lister Institute, **1562**.

HAEMOPROTEUS INFECTION. In ducks in N. Michigan, **67**; transmission of H. columbae by blood inoculation and tissue transplants, **2881**.

HAEMORRHAGIC SEPTICAEMIA. See Pasteurella Infection.

HAIR. As a textile fibre, **895**; achromotrichia due to copper deficiency, **1434**; cattle hair, **1827**; disinfection of goat hair, **2176**; mimosine, a plant poison causing loss of hair in horses, **3323**.
See also Wool.

HALOMETER. See Technique, haematological.

HAMSTERS. Effect of cholesterol feeding in hamsters, **143**; parodontal disease in hamsters, **171**; renal tumours in male hamsters treated with oestrogen, **454**; effect of androgen on skin and sebaceous glands of hamsters, **541**; growth promoting action of human saliva for hamsters, **1070**; hamster raising, **2439**.
See also Leptospira Infection, general; Mycobacterium Tuberculosis, general; Newcastle Disease.

HANSEN'S DISEASE. See Mycobacterium Leprae Infection [Leprosy].

HAPLORCHIS. H. yokogawai, a fluke common in dogs and cats, found in man in Indonesia, **3270**.

HAPTOGLOBIN. See Blood, haptoglobin.

HARD PAD DISEASE. Outbreak in huskies, **382**; canine distemper and similar diseases, **1013**; study of a meningitic syndrome in dogs, **1694**; in Morocco, **3424**; and canine distemper and infectious hepatitis, **3575**.

HARES. See Brucella Tularensis Infection [tularaemia]; Pasteurella Infection, general.

HARVEST MITE. See Trombicula.

HAVERHILL FEVER. See Actonomyces Muris-Ratti Infection.

HAWAII. See Newcastle Disease.

HEART. See Circulatory System, heart.

HEART WATER. In Nyasaland, **2769**; in Northern Rhodesia, **3421**.

HEART-WORM. See Filariae.

HEAT REGULATION. See Temperature, body, environmental.

"HEAVES." See Emphysema.

HEDGEHOGS. Susceptibility to T. vivax infection, **2547**.

HELIOTROPIUM. See Poisons and Poisoning.

HELMINTH PARASITES. In foals, **437**; chemotherapy, **443**; metabolism of parasitic helminths, **773**; respiratory metabolism, **1058**; Babesia infections in horses with intensive helminth invasion, **1670**; seasonal variation in worm egg output in Scottish hill sheep, **1742**; in the Pavana district, Brazil, **1745**; histamine content and toxicity of helminths, **2637**; in British Honduras,, **2776** of sheep in the Rome district, **2937**; of cattle and pigs, **2939**; in Canterbury sheep, **3277**; in Australia, **3412**; in Leeward Islands, **3415**; in East Africa, **3418**; in U.S.A., **3428**; in camels, **3625**; allergic intradermal palpebral test for diagnosis in cattle, **3645**.
See also Anthelmintics; Ascarids; Cestodes; Eggs, Helminth; Fasciola; Filariasis; Heterakis; Lungworms; Nematodes; Parasitic Infestation, General; Parasiticides; Stephanurus; Strongyles; Trematodes.

HELVEDRIN. Effect of helvedrin [sphedrine and adrenalin] on the electrocardiogram in dogs, **2685**.

HELVELLA ESCULENTA. See Poisons and Poisoning, plant poisoning.

HEMIMELIA. See Teratology.

HEMLOCK. See Poisons and Poisoning, plant poisoning.

HEPARIN. Effect on gowth of bacteria and yeasts, **1661**.

"HEPARINOCYTES." See Blood, corpuscles [white].

HEPATITIS.

General. Diagnosis, **169**; homologous serum hepatitis, **738**; infection in kids resembling infective hepatitis, **1103**.

Canine Virus. Hepatitis and nephritis in dog distemper, **378**; contagious hepatitis in dogs, **726**; canine distemper and similar diseases, **1013**; rapid diagnosis of contagious canine hepatitis by touch preparation of fresh liver tissue, **1367**; occurrence in Gt. Britain, **1692**; in Belgium, **1693**; clinical details, **2022**; a discussion, **2906**; observations on a spontaneous epidemic, **2907**; in Italy, **2908**; and canine distemper and "hard pad", **3575**.

Infective, in Man. Studies on the agent, **1703-1704**; late infectivity, **2291**; a factor in old hepatitis serum capable of agglutinating fowl red cells, **3250**.

HEREDITY.

General. Inherited non-lethal anatomical characters in cattle, **879**; population genetics and animal improvement as illustrated by the inheritance of egg production, **1901**; and constitutional diseases of piglets, **2170**; inheritance of dominant pigmentation in fine wool Portuguese sheep, **2178**; book, genetics of the sheep, **2220**; inheritance of skin wrinkling in sheep, **2432**; inherited factor for erythrocyte type in the horse, **2707**; genetical research on the number of vertebrae in the pig, **2721**; human biochemical genetics, **2728**; inherited feather conditions, **2785**; inheritance of D.D.T. resistance in housefiles, **3630**.

Of Disease. Hereditary hernia in domestic animals, **880**; hereditary diseases in animals, **1543-1544**; hereditary aspect of eye cancer in Hereford cattle, **1750**; pink-eye gene and susceptibility to fibrosarcoma in mice, **1757**; histopathology of the jaws and teeth of a dwarfed Penkingese dog, **2098**; hereditary osteopetrosis in rabbits, **2171**; book, heredity of predisposition to disease, **2795**; congenital photosensitivity in Southdown sheep, **3385**.
See also Bones, diseases; Neoplasms, spontaneous; Reproduction and Reproductive Disorders; Rhinitis, Infectious Atrophia.

Lethal Factors. A sex-linked lethal gene in the fowl, **2172**; photosensitivity, in sheep, **3385-3386**; lethal and other inherited factors causing abnormalities in New Zealand stock, **3388**; generalized ankylosis, a lethal factor in Friesian cattle in New Zealand, **3749-3750**.
See also Teratology.

HERMAPHRODITISM. In cattle, **883**; incidence of female genital abnormalities in swine, **1545**.

HERNIA. Hereditary hernia in domestic animals, **880**; congenital diaphragmatic hernia in a cat, **881**.

HERPES. Herpes virus and cell nucleus, **367**.

HERRINGS. See Food Hygiene, food poisoning, in man.

HETERAKIS. H. gallinae in the transmission of blackhead, **346**; protozoan hyperparasitism of H. gallinae, **697**; H. gallinarum or H. gallinae, **770**; transmitting blackhead, **1322**.

HETEROSTRONGYLUS. See Strongyles.

HETRAZAN. See Anthelmintics, for dogs.

HEXACHLORCYCLOHEXANE. See Parasiticides, benzene hexachloride.

HEXACHLORETHANE. Toxicity and anthelmintic efficiency, in sheep, **3278**.

HEXOESTROL. See Sex Hormones, oestrogens.

HEXYL-RESORCINOL. Anthelmintic for dogs, **444**.

HIBERNATION. "Brown fat" tissue (hibernating gland) and alarm reaction in rats, **212**.
See also Lungworms.

HIDES. See Zootechny.

HIPPOBOSCA. On camels, **3625**.

HISTAMINASE. In the prevention and cure of pulmonary oedema in g. pigs, **2125**.

HISTAMINES. Histamines and antihistaminic nerve block, **207**; action of bacterial endotoxins and synthetic antihistamine on allergic skin reactions, **420**; histamine and thiamine inhibition of antihistamines on bacteria, **522**; antihistamines in allergic and non-allergic dermatoses, **818**; paralytic action of histamine on ruminal musculature, **854**; neurologic evaluation of the cutaneous histamine reaction, **855**; bacterial production and destruction of histamine in vitro, **989**; synthetic antihistamines in veterinary medicine, **1138**; antihistamine in treatment of laminitis in horses, **1139**; heteroplastic parabiotic intoxication, antibody formation and antihistamine treatment, **1392**; pharmacology of histamine, **1481**; antihistamine therapy, **1483**; effect of antihistaminics on mice hypersensitive to H. pertussis vaccine, **1484**; effect of antihistamines on bacterial decarboxylation of histidine, **1982**; levels in pulmonary emphysema in the horse, **2086**; action on bronchial tone of horses with emphysema, **2123**; and prevention of experimental pulmonary oedema in g. pigs, **2124**; toxicity and histamine content of Ascaris spp. and F. hepatica, **2637**; histamine and antihistamine compounds in veterinary medicine, **2678**; effect of histamine and antihistamines on oxidation mechanism in neuro-allergic diseases, **3701**.
See also Blood, general; Histaminase.

HISTIDINE. Effect of antihistamines on bacterial decarboxylation of histidine, **1982**.

HISTIOCYTES. Histiocytic reaction in equine infectious anaemia, **3559**.
See also Reticulo-Endothelial System.

HISTOMONAS MELEAGRIDIS INFECTION [BLACKHEAD]. In turkeys, **65** and **66**; role of Heterakis gallinae in transmission, **346**; neoarsphenamine in blackhead, **347**; Enheptin-T in blackhead, **348**; chemotherapy of experimental blackhead, **696**; protozoan hyperparasitism of Heterakis gallinae, **697**; transmission by Heterakis gal-

HISTOMONAS MELEAGRIDIS INFECTION [BLACKHEAD]—[cont'd.]
linae, **1322**; studies on blackhead and prophylactic effect of a quinoline derivative, **1323**; in Yuogslavia, **2205**; report, Denmark, **2459**; chemotherapy, **2880**; brief account, **3198**.
HISTOPLASMA FARCIMINOSUM INFECTION [EPIZOOTIC LYMPHANGITIS]. Spread and modes of infection, **976**; epizootic lymphangitis in horses, **1292-1293**; pulmonary granuloma in epizootic lymphangitis, **1294**; in Turkey, **2249**; infection of internal organs, **2527**; in the Philippines, **2528**; treatment with a preparation from Ranunculus spp., **2529**; formol treatment, **2857**; experimental production in horses, **3501**.
See also Technique and Apparatus, staining.
HISTOPLASMA INFECTION.
General. Experimental infection in rabbits, **673**; collodion agglutination test, **1645**; experimental histoplasmosis in mice, **1960**; use of mucin in experimental histoplasmosis in mice, **1961**; failure of streptomycin to enhance infectivity in mice, **2250**; collodion agglutination test for histoplasmosis, **2525**; in man and animals, **2526**; growing on chick embryos, **2861**; a review, **3500**; histoplasmin skin test in animals, **3502**.
In Cattle. In cattle in the U.S.A., **51**.
In Dogs. A case of histoplasmosis in a dog, **52**.
In Horses. See Histoplasma Farciminosum Infection.
HISTOPLASMIN. See Histoplasma Infection, general.
HOG CHOLERA. See Swine Fever.
HOLLAND. See Netherlands.
HONG KONG. See Rinderpest, immunology.
HOOF. See Foot.
HOOKWORMS. See Ancylostoma; Bunostomum.
HORMONES. See Adrenal Gland; Adrenocorticotrophic Hormone (A.C.T.H.); Books, endocrinology; Desoxycorticosterone; Digestive System, general; Endocrine System; Lactation; Parathyroid Glands; Pituitary Gland; Pregnancy, diagnosis; Sex Hormones; **Thymus; Thyroid Gland.**
HORN-FLIES. See Lyperosia.
HORSE FLIES. See Myiasis.
HORSES.
General. Colour and markings of horses, **3126**.
See also Anaesthesia and Analgesia; Blood-Brain Barrier; Doping; Electrocardiography; Genital System, oestrous cycle, semen and spermatozoa; Insemination, Artificial; Nutrition; Physiology, General; Pregnancy, diagnosis; Reproduction; Spleen; Teeth; Vitamins, vitamin B_1, vitamin E; Zootechny.
Arthropod Parasites. See Mange, in horses; Oestridae, Gastrophilus; Parasitic Infestation, general; Tabanus; Ticks, Ixodidae.
Bacterial Diseases. See Actinobacillosis; Clostridium Botulinum Intoxication [Botulism]; Ophthalmia, Periodic; Pfeifferella Mallei Infection [Glanders]; Salmonella Infection, in horses; Sterility.
Diseases, General. Paralysis, **491**; polluted water causing unthriftiness, **577**; dry coat in horses, **1097** and **1099**; a manual of horse medicine and surgery, **1246**.
See also Arsenic; Blood, general, corpuscles [red], groups, transfusion; Bones, general, fractures; Calcium; Circulatory System, diseases; Colic; Digestive System, general, caecum, diseases, intestine; Eyes, diseases; Foot; Haemolytic Diseases; Laminitis; Leucosis; Myohaemoglobinuria, Paralytic; Neoplasms, general; Ophthalmia, Periodic; Poisons and Poisoning, organic poisoning; plant poisoning; Purpura; Pyribenzamine; Services, Veterinary, U.S.S.R.; Sterility; Streptomycin.
Fungous Diseases. See Histoplasma Farciminosum Infection; Sporotrichum Infection.
Helminths Parasites. Of foals, **437**; phenothiazine for yearling foals, **438**.
See also Anthelmintics; Parasitic Infestation, general; Setaria; Strongyles.
Protozoan Diseases. See Babesia Infection [Piroplasmosis], in horses; Trypanosoma Equiperdum Infection; Trypanosoma Evansi Infection [Surra]; Trypanosoma Vivax Infection.
Virus Diseases. See Anaemia, Equine Infectious; Encephalitis, Japanese B; Encephalomyelitis, Equine; Epithelioma; Horse-Sickness, African; Influenza, in horses; Virus Abortion.
HORSE-SICKNESS, AFRICAN. Adaptation of the virus to g. pigs, **720**; in Kenya, **2456**.
See also Culicoides.
HOUSE-FLIES. Effect of insecticides, **756**; D.D.T. sensitiveness of various parts of the body, **1036**; action of piperonyl butoxide with pyrethrum, **2130**; tests with adults and larvae resistant to D.D.T., **2302**; control in dairy barns, **3262**; D.D.T. resistance, **3263**; inheritance of D.D.T. resistance, **3630**.
HUMIDITY. See Temperature, environmental.
HUMP. See Zebu.
HUNGARY. See Immunology, vaccines.
HUSBANDRY. See Zootechny.
HUSKIES. See Hard Pad Disease.
HYALOMMA. See Ticks, Ixodidae.
HYALURONIDASE. In fertilization of rabbit ova, **849**; concentration and fertility of bull semen, **1197**; production in vitro by mastitis streptococci, **2223**; its significance for infectiosity of Cl. welchii, **2853**; mesomucinase and hyaluronidase in serum, urine and milk of pregnant and non-pregnant cows, **3036**; effect on motility of spermatozoa, **3075**; assay and administration, **3363**; adrenal-hyaluronidase relationship in infection, **3517**; hyaluronidase inhibitor and serum mucoproteins in patients with lipoid nephrosis and glomerulonephritis, **3697**; chorionic gonadotrophin, A.C.T.H. and adrenal-hyaluronidase relationship, **3744**.
HYDATID DISEASE. See Echinococcus.
HYDROCEPHALUS. Maternal nutrition and hydrocephalus in newborn rats, **794**; vitamin B_{12} for prevention in infant rats, **2973**.
HYDROCHLORIC ACID. See Digestive System, stomach.
HYDROGENASE. Production by Bact. coli, **990**.
HYDROGEN-ION CONCENTRATION. Fatigue in relation to pH and bacterial contamination of meat, **2158**; of whole arterial blood, **2390**; effect of pH on bacteriostatic activity of certain nitrophenols, **2692**; range of extracellular pH tolerated by macrophages and malarial parasites grown in tissue culture, **3531**.
HYDROPS. Hydrops of foetus, a shock manifestation, **168**.
HYDROXYLAMINE. In Dengue fever, **1712**.
HYGIENE.
General. See Disinfectants, Antiseptics and Sterilization; Food Hygiene; Sewage; Smog; Ventilation; Water.
Of Livestock. Polluted water causing unthriftiness of racehorses, **577**; disinfection of stables, **869**; stall climate, **870**; J.P.H.D. manure treatment midden, **1227**; fumigation of hatcheries with formaldehyde against Newcastle disease, **1374**; cattle health and soil, **1529**; power sprays for dairy premises, **2056**; book, farm hygiene and veterinary medicine, **2803**; air-borne contamination from animal houses, **2980**; cattle shades, **3069**; compost and animal diseases, **3070**.
See also Dips; Disinfectants, Antiseptics and Sterilization; Technique and Apparatus, zootechnical; Water.
HYLESIA. H. urticans, a venomous moth of French Guiana, **2615**.
HYMENOLEPIS. Action of areca nut and Filix mas extracts on H. nana, **2626**.
HYOSTRONGYLUS. Histotropic phase of H. rubidus larvae, **1740**.
HYPERBILIRUBINAEMIA. See Blood, diseases.
HYPERKERATOSIS, BOVINE. An outbreak in calves associated with feed, **2089**; exposure of incisor roots in X-disease, **2090**; experimental production by feeding processed concentrate, **3327**; in U.S.A., **3428**.
See also Skin, diseases.
HYPERPARASITISM. See Heterakis.
HYPERPARATHYROIDISM. See Parathyroid Glands.
HYPOCALCAEMIA. See Metabolism.
HYPOCHLORHYDRIA. See Digestive System, stomach.
HYPOCUPRAEMIA. See Copper.
HYPODERMA. See Oestridae, Hypoderma.
HYPOGLYCAEMIA. Brain and organ lesions in rats from insulin hypoglycaemia, **214**.
See also Glycaemia.
HYPOMAGNESAEMIA. See Magnesium.
HYPOPHOSPHATAEMIA. See Phosphorus.
HYPOPHYSIS. See Pituitary Gland.
HYPOPROTHROMBINAEMIA. See Blood, prothrombin.
HYPOTHALAMUS. Role of hypophyseal-hypothalamic system in haemotopoiesis, **1469**; effect of lesions on the hypothalamus on behaviour of dogs, **2724**; a study, **2993**.
HYPOTHERMIA. See Temperature, environmental.
HYPOURICAEMIA. See Urinary System, diseases.
HYRAX. Susceptibility to T. vivax, **3195**.
HYSTERIA, CANINE. And spasmophilia, in dogs, **2097**; a thesis, **3317**.
See also Agene.
HYSTEROGRAPHY. See Genital System, uterus.

I

ICE. See Therapeutics and Materia Medica.
ICE-CREAM. See Food Hygiene, general.
ICELAND. See Diseases General.
ICTEROHAEMOGLOBINURIA. See Leptospira Infection, in cattle.
ICTERUS. See Haemolytic Diseases; Liver, diseases; Photosensitization.
IMMUNOLOGY.
General. Immunity to ticks, **111**; serological relationship between bacteria and host, **404** and **405**; formation of precipitates on mixing anti-horse sera, **411**; serological demonstration of toxic insoluble enzymes, **500**; serum globulins and immunity, **1029**; a discussion on immunity, **1388**; diet protein in relation to disturbed host-parasite balance, **1714**; inanition immunity, **1715**; activating

IMMUNOLOGY—General—[cont'd.]
effect of calcium on a bactericidal substance for B. subtilis in human serum, **2121**; mechanism of the Gros titration and formolgel reaction, **2192**; inactivation of autolysin of meningococci by suspension in saccharose solution and immunological properties of the suspension, **2605**; effect of cortisone on plasma cells and reticulo-endothelial system in hyperimmunized rabbits, **3020**; association of lipoproteins with inhibition of streptolysin S by serum, **3619**; rabbit acute phase protein, analogous to human C-reactive protein, **3621**.
See also Books, immunology; Gliotoxin; Leukergy; Shwartzman Phenomenon; for immunity to specific diseases see under name of disease or causal organism.
Agglutination. In pullorum disease, **31**; in vibrionic abortion of sheep, **327**; of Trichomonas foetus by vaginal mucus, **342**; of cercariae of Schistosoma mansoni by immune sera, **753**; of bacteria by streptomycin, **829**; isolation of S. pullorum from serologic reactors, **1277**; properties of chick allantoic fluid in relation to influenza virus agglutination, **1358**; studies on group-specific substances in ass saliva, **1393**; collodion agglutination test for H. capsulatum infection, **1645**; diagnosis of leptospirosis, **1652**; natural antisheep agglutinins in mice of inbred strains, **1720**; and lysis of Leptospira by sera from horses with periodic ophthalmia, **2088**; collodion test for histoplasmosis, **2525**; effect of decomposed fish meal on non-pullorum agglutination, **2843**; of L. pomona by pig serum, **2867**.
See also Brucella Infection, immunology; Newcastle Disease, immunology.
Agglutination [Haemagglutination]. A thermostable inhibitor from animal tissues, **100**; assessment of virus haemagglutinins by centrifugation, **395**; haemagglutinating behaviour of type A influenza virus, **717**; of polysaccharide treated erythrocytes by tularaemia antisera, **969**; persistence of Br. tularensis agglutinins in sheep serum, **1272**; neutralization and inhibition of swine influenza virus by serum of suckling pigs and their dams' milk, **1397**; factors influencing agglutinability of red cells, **1398**; free-cell phenomenon in isohaemagglutination, **1716**; heterophile agglutination variability of erythrocytes from different sheep, **1719**; demonstration of agglutinins after intraperitoneal injection of Type I Pneumococcus in g. pigs, **1914**; inhibition of influenza virus by mucoids, **2007**; persistent antigenic variation of influenza A viruses after incomplete neutralization in ova with heterologous immune serum, **2008**; growth curves of influenza virus based on haemagglutination titres in embryonated eggs, **2275**; pulped buffalo-virus material for haemagglutination through vaccinia virus and the effect of rabbit immune serum, **2572**; a factor in old hepatitis serum capable of agglutinating fowl red cells, **3250**; adsorption of proteins on erythrocytes treated with tannic acid and subsequent haemagglutination by antiprotein sera, **3620**.
See also Bacillus Anthracis Infection; Blood, transfusion; Brucella Infection, immunology; Distemper, Dog, immunology; Influenza, immunology; Mycobacterium Tuberculosis Infection, immunology; Newcastle Disease, immunology.
Allergy. Action of bacterial endotoxins and antihistamine on skin allergic reactions, **420**; allergic reaction from injection or ingestion of sugar, **796**; antihistamines in allergic and non-allergic dermatoses, **818**; neurologic evaluation of the cutaneous histamine reaction, **855**; demyelination in g. pigs in allergic encephalomyelitis, **1030**; allergic response to johnin and tuberculin of various skin regions of cattle, **1269**; an attempt to distinguish between vaccination-allergy and superinfection-allergy in Oslo Public Health Service B.C.G. material, **1604**; allergic reaction for diagnosis of Q fever, **2038**; allergic properties of synthetic mallein, **2495**; allergic test for worm infestation in cattle, **3645**; effect of histamine and antihistamines on neuro-allergic diseases, **3701**.
See also Books, Immunology; Brucella Infection, immunology; Castor Oil; Lungworms; Mycobacterium Tuberculosis Infection, immunology.
Anaphylaxis. Action of bacterial endotoxins and antihistamine on local anaphylactic shock, **420**; anaphylaxis in pigs, **1031**; role of leucocytes and platelets in anaphylactic and peptone shock, **1482**; effect of salicylates, aminopyrine and related compounds on anaphylactic shock in rabbits, **1807**; effect of cortisone on experimental cardiovascular and renal lesions produced by anaphylactic hypersensitivity, **2127**; effect of A.C.T.H. and cortisone on "anaphylactoid reaction", **2606**; anaphylactic nature of acute necrosis of the pancreas, **2664**; inhibition of anaphylaxis in g. pigs by d-catechin, **2924**.
See also Leukergy.
Antibodies. Nutritional deficiency in man and antibody production, **137**; food and resistance to disease, **138**; effect of A.C.T.H. on, **410**; purification of antiprotein antibodies, **412**; complement fixing antibodies against brain tissue in sera of persons treated with antirabies vaccine, **416**; mechanism of production, **748**; formation, **749**; effect of A.C.T.H. and X-Rays on amount of circulating antibodies, **750**; relation of adrenal cortical steroids to release, **751**; failure of antibody production in chick embryos, **1026**; passage from mother to embryo in rabbits, **1027**; selective admission in rabbit foetus by yolk-sac splanchnopleur, **1028**; role of non- precipitating antibodies in passive sensitization of human skin by rabbit-anti ovalbumin, **1390**; evidence for production by homografts of lymphoid tissue and skin, **1391**; heteroplastic parabiotic intoxication, antibody formation and antihistamine treatment, **1392**; nucleoproteins and production, **1394**; autoisoantibodies in horse blood, **1400**; study of experimental acute disseminated encephalomyelitis in Rhesus monkeys and complement-fixing antibodies, **1686**; placental transmission of antibodies and serum gamma globulins, **2047**; anti-globulin technique applied to detection of non-agglutinating antibodies against S. typhi O in human sera, **2184**; augmenting action of lecithin and lipoids on production, **2297**; method for the demonstration of tissue antibody, **2921**; local production, **3257**; natural iso-antibodies in horse blood, **3258**; production, **3612**; radioactive antibodies, **3613**; effect of cortisone and A.C.T.H. on concentration, **3614**; effect of tumours on antibody levels in mice, **3656**.
See also Immunology, maternal transfer; under names of specific diseases and organisms.
Antigens. Adsorption of complement by antigen-antiserum mixture, **406**; reaction of reticular tissues to antigens, **409**; action of formalin on, **421**; localization in tissue cells, **1721**; persistent antigenic variation of influenza A viruses after incomplete neutralization in ova with heterologous immune serum, **2008**; antigenic relationship of mammalian spermatozoa, **2048**; preparation of fungous antigens, **2862**; allergic test for worm infestation in cattle, with antigen from worms, **3645**.
Seee also under names of specific diseases and organisms.
Complement Fixation. Absorption of complement by antigen-antiserum mixture, **406**; application of conglutinating complement absorption test to viruses, **407**; quantitative complement-fixation test of luetic sera, **408**; seasonal fluctuation in complement titre of g. pig serum, **554**; interchangeability of complement components of different animal species, **754** and **1389**; study of pox viruses, **1679**; complement-fixation test in type determination of equine infectious encephalomyelitis, **1690**; in equine virus abortion, **2280**; production of an antigen for anaplasmosis complement-fixation tests, **2563** effect of time and temperature of inactivation on the reactivity of certain bovine sera to complement-fixation, **2603**.
See also Agalactia, Contagious; Encephalitis, general, Japanese B; Foot and Mouth Disease, immunology, virus; Mycobacterium Tuberculosis Infection, diagnosis; Newcastle Disease, immunology; Rickettsia Infection, general, murine typhus, Q fever; Technique and Apparatus, immunological; Toxoplasma Infection, general; Trichomonas Infection, general; Viruses, neurotropic.
Conglutination. Adsorption of complement by antigen-antiserum mixture, **406**; application of conglutinating complement absorption test to viruses, **407**; interchangeability of complement components in conglutination, **1717**; the conglutination phenomenon, **2602**.
Flocculation Test. See Mycobacterium Tuberculosis Infection, immunology.
Haemolytic Disease. Experimental study of haemolytic disease of new-born due to iso-immunization of pregnancy, **103**; iso-immunization in pigs, **417**; existence of autoisoantibodies in horse blood, **1400**.
See also Immunology, maternal transfer; Haemolytic Diseases.
Maternal Transfer. Selective admission of antibodies in rabbit foetus by yolk-sac splanchnopleur, **1028**; Coxsackie virus cross protection test in infant mice born of vaccinated mothers, transfer of immunity through milk, **2013**; placental transmission of antibodies and serum gamma globulins, **2047**; transfer of antibody from mares to mule foals, **2922**; persistence of antibody passively transferred from mother to infant, **2923**; in swine influenza, **3548**.
See also Immunology, haemolytic disease.
Vaccines. See under names of specific diseases and organisms.
IMPALA. See Antelopes.
INCLUSION BODIES. Inclusion bodies in bacteria under the electron microscope, **2539**.
See also Viruses, inclusion bodies.
INCUBATION. Influence of thyroprotein treatment of hens on thyroid site of chicks and on incubation, **797**.
See also Eggs, hatchability.
INDIA. See Babesia Infection [Piroplasmosis], general; Clostridium Infection, in cattle; Diseases General; Nutrition, general; Protozoa, General; Rabies, treatment and control; Reports, India; Zootechny.
INDIGOFERA. Causing poisoning in horses, **3412**.
See Poisons and Poisoning, plant poisoning.

INDO-CHINA, FRENCH. See French Indo-China.
INDONESIA, UNITED STATES OF. See Diseases, General; Leptospira Canicola; Leptospira Infection, in dogs; Mycobacterium Tuberculosis Infection, treatment and control; Myiasis; Newcastle Disease, immunology; virus; Pasteurella Infection, in swine; Pfeifferella Mallei Infection [Glanders]; Trematodes.
INFERTILITY. See Sterility.
INFLUENZA.
General. Experimental study, **1354**; effect of A.C.T.H. on the course of experimental type A infection, **2896**; experimental type A infection in ferrets treated with A.C.T.H., **2897**; human and swine influenza, **3549**.
See also Haemophilus Influenzae.
In Cattle. Symptoms and causal organism, **715**; influenza sinusitis, **716**.
In Horses. In Dublin, **1353**.
Immunology. Serological diagnosis, **1680**; antibody response in experimental influenza, **1683**; inhibition of haemagglutination by mucoids, **2007**; experimental immunology, **2009**; production of antigens, **2010**; protective value of active immunization, **2011**; enhancement of immunity by pathotopic vaccination, **2012**; influenza virus haemagglutination and the mechanism of the Francis phenomenon, **3223**; seasonal occurrence in adult swine and colostral transfer of haemagglutinin inhibitors from dam to offspring, **3548**; cold haemagglutination reactions, **3552**; vaccination, **3553**.
See also Influenza, virus.
In Swine. Isolation of virus in Czechoslovakia, **83**; is porcine encephalomyelitis part of the swine influenza complex? **1012**; experimental study, **1354**; neutralization and haemagglutination inhibition of swine influenza virus by serum of suckling pigs and dams' milk, **1397**; aetiology and pathology in piglets, **2575**.
Virus. Isolation, **82** and **83**; vitamin D and susceptibility of mice to experimental infection with swine influenza virus, **368**; variation in influenza viruses, **369**; cellular infection by influenza and related viruses, **370**; effect of terramycin on influenza A virus in chick embryos and mice, **371**; effect of human influenza virus (type A) on incidence of lung tumours in mice, **455**; haemagglutinating behaviour of type A (PR8) virus, **717**; behaviour of type A virus, **1355**; rapid method for detection of virus during epidemics, **1356**; cultivation in de-embryonated egg, **1357**; properties of chick allantoic fluid in relation to influenza virus agglutination, **1358**; electron microscopy of filamentous forms of influenza and fowl plague viruses, **1359**; relation of virus concentration in mouse lung to survival of host, **1681**; incomplete growth cycle in mouse brain, **1682**; effect of receptor-destroying substances upon febrile response of rabbits, **2006**; inhibition of virus haemagglutination by mucoids, **2007**; persistent antigenic variation of influenza A viruses after incomplete neutralization in ovo with heterologous immune serum, **2008**; characteristics of substrains of virus A, **2272**; recombination of characters in strains used in mixed infections, **2273**; chemical inhibition of growth in embryonated eggs, **2274**; growth curves of virus based on haemagglutination titres in embryonated eggs, **2275**; process of infection, reproduction and variation of viruses and ecological approach to the disease, **2893**; isolation and identification of a strain, **2894**; multiplication in the fertile egg, **2895**; comparison of growth curves of adapted and unadapted lines of virus, **3550**; inactivation with p-benzoquinone and other oxidizing agents, **3551**.
See also Influenza, immunology.
INSECTICIDES. Aircraft disinsectization in West Africa, **426**; aerosols for aircraft disinsectization, **427**; synthetic insecticides in control of Boophilus microplus, **429**; toxicity index of insecticides, **534**; insecticide prepared from mamey tree (Mammea americana), **755**; toxicity of chlorinated insecticides of livestock, **824**; colonial insecticide research, Entebbe, **843**; new type insecticide, **1154**; harvester termite control in South Africa, **1188**; action of piperonyl butoxide with pyrethrum on houseflies, **2130**; spray tunnel for cattle, **2175**; a method of injecting insects with minute doses, **2301**; evaluation of certain insecticides in horn-fly control, **2303**; contamination of milk and meat by insecticides, **2408**; a generator producing dry aerosols with organic insecticides, **2436**; toxicity of D.D.T., benzene hexachloride and other insecticides to sheep and cattle, **2672**; aircraft disinsectization, **2687**; testing insecticide sprays, **2688**; contact insecticides, **3024**; tests for protection against body strike, **3261**; excretion of D.D.T. and T.D.E. [1,1-dichloro-2, 2-bis (parachlorophenyl)] ethane in cows' milk, **3366**.
See also Aerosols; Benzene Hexachloride; D.D.T.; Parasiticides; Parathion.
INSEMINATION, ARTIFICIAL.
General. Control of dourine, trichomoniasis epididymitis and vaginitis in Italy by artificial insemination, **238**; control of bacteria in semen extenders, **240**; containers for semen transport, **263**; statistical records, **580**; technique, **581**; influence of time of insemination on conception, **582**; milk as semen diluent, **583**; in Czechoslovakia, **871**; penicillin and sulphanilamide in semen diluters, **875**; a new technique, **1189**; in Austria, **1530**; as a means of preventing infectious diseases, **2746**; in Holland, in 1949, **3071**; work in eastern Flanders, **3370**.
See also Genital System, semen and spermatozoa.
In Cattle. Transmission of trichomoniasis by artificial insemination, **59**; fertility of bovine semen in extenders containing sulphanilamide and antibiotics, **241**; sterility control in cattle and artificial insemination, **248**; fertility of Friesian bulls, **592**; fertility and viability of bull semen dilutions, **873**; admixtures to bull semen, **874**; and spread of brucellosis in cattle, **957**; in maiden heifers, **1190**; for control of sexual health in cattle, **1191**; for prevention of sterility, venereal diseases and testing of bulls, **1192**; bull semen extenders containing sulphanilamide penicillin, streptomycin and polymyxin, **1194**; effect of bacteria on fertility of bovine semen, **1196**; hyaluronidase concentration and fertility of bull semen, **1197**; supervision of bulls used for artificial insemination, **1531**; sex-ratio of calves produced by natural and by artificial insemination, **1532**; toxicity of rubber for bull spermatozoa, **1533**; most favourable time during oestrus for carrying out artificial insemination in cows, **1859**; fertility of diluted bull semen containing streptomycin, **1862**; book, evaluation of bull semen and artificial insemination, **1900**; effect of cervical, uterine and cornual insemination on fertility in dairy cows, **3077**; and blood groups, **3371**; in Denmark, **3450**; resorption of the foetus and early abortion in artificial insemination, **3733**.
See also Genital System, semen and spermatozoa.
In Goats. In goats, **2411** and **2747**.
In Horses. Milk used as diluent of semen, **583**.
In Swine. A discussion, **3080**; minimal volume of semen and number of spermatozoa for fertility, **3081**.
INSTITUTES. See Research Institutes.
INSULIN. Brain and organ lesions in rats caused by insulin hypoglycaemia, **214**; effect of insulin on acidity of abomasal contents of lambs, **1830**.
INSURANCE. Osteomalacia and insurance of farm animals, **1764**.
INTESTINES. See Digestive System, intestines.
IODINATED CASEIN. See Thyroid Gland, iodinated proteins.
IODINE. Studies on lymphocytes from persons treated with radioactive iodine, **1808**; effect of A.C.T.H. and surgical operations on iodine excretion, **1850**; iodized oil treatment of mastitis, **2483**; content of the ovary in pregnant cows, **3047**.
See also Goitre; Thyroid Gland, iodinated proteins; Radioactive Isotopes.
IODOCHLOROXYQUINOLINE. In the treatment of calf coccidiosis, **349**.
IRAN. See Persia.
IRELAND, REPUBLIC OF. See Influenza, in horses; Mycobacterium Tuberculosis, human infection; Paramphistomum; Pasteurella Infection, in cattle; Pastures and Grazing; Phosphorus; Reports, Republic of Ireland.
IRIDOCYCLITIS, RECURRENT. See Ophthalmia, Periodic.
IRON. Iron absorption test, **474**; colloidal iron in anaemia, **1486**; plasma iron and saturation of plasma iron-binding protein in dogs, **2080**; metabolism during suckling, **2385**.
See also Blood, general; Nutrition; Radioactive Isotopes.
IRRADIATION. Photochemical formation of carcinogens from skin fats, **457**; bacteriological evaluation of pasteurized and irradiated milk in Hesse, **1851**; causing changes in the testis, **2452**.
See also Radioactivity; Ultraviolet Light; X-Rays.
IRRIGATION. See Pastures and Grazing.
ISO-HAEMAGGLUTINATION. Immunology, agglutination (haemagglutination).
ISO-IMMUNIZATION. See Immunology, haemolytic disease.
ISOTOPES. See Radioactive Isotopes.
ISRAEL. See Bacillus Anthracis Infection [Anthrax]; Clostridium Infection, in fowls; Leptospira Infection, in man from animals; Rabies; Rickettsia Infection, Q fever.
ITALY. See Aujezsky's Disease; Clostridium Botulinum Intoxication [Botulism]; Digestive System, diseases; Encephalomyelitis, Porcine; Fusiformis Nodosus Infection [Foot Rot]; Helminth Parasites; Hepatitis, canine virus; Insemination, Artificial; Leishmania Infection, in man; Leptospira Infection, general; Newcastle Disease; Pox Diseases, swine pox; Rabies, treatment and control; Salmonella Pullorum Infection; Schistosoma Infection.
IXODES. See Ticks, Ixodidae.

J

JACKALS. Experimental infection with B. canis, **2559**.
JAPAN. See Atomic Energy; Diseases, General; Encephalitis, Japanese B; Rickettsia Infection, scrub typhus; Rinderpest, immunology; Schistosoma Infection.

JAPANESE B ENCEPHALITIS. See Encephalitis, Japanese B.
JAUNDICE. See Liver, diseases.
JAVA. See Newcastle Disease.
JAWS. Histopathology of jaws and teeth of a dwarfed Pekingese, **2098**; development of joints concerned with early jaw movement in sheep, **3727**.
See also Bones, general.
J-FACTOR. See Blood, corpuscles (red).
JOHNE'S DISEASE. See Mycobacterium Johnei Infection, [Johne's Disease].
JOHNIN. See Mycobacterium Johnei Infection (Johne's Disease).
JOINT-ILL. Caused by Bact. viscosum equi and treated with sulphaguanidine and sodium salicylate, **944**; in Netherlands, **2458**; in Norway, **3771**.
JOINTS. Effect of high fat diet on joints of aging mice, **2322**; development of joints concerned with early jaw movements in sheep, **3727**; generalized ankylosis, occurring in Friesian cattle in New Zealand and correction of dystocia, **3749-3750**.
See also Arthritis; Disc Protrusion; Joint-Ill; Perosis.

K

K.A.G. See Rinderpest, immunology.
KALA-AZAR. See Leishmania Infection, in man.
KALANCHOE THYRSIFLORA. Poisons and Poisoning, plant poisoning.
KATAYAMA. See Snails.
KEDS. See Melophagus.
KENYA. See Glossina; Reports, East Africa; Spirillum Infection; Trypanosoma Infection, general.
KERATITIS, INFECTIOUS, IN CATTLE. See Eyes, diseases.
KERATO-CONJUNCTIVITIS. See Eyes, diseases.
KETOSIS. Cobalt therapy, **150**; in ruminants, **486**; hypomagnesaemia and ketosis in cows, **808**; effect of vitamin A deficiency on ketosis, **1081**; studies on ketosis in dairy cattle, **1082-1084**; isopropyl alcohol in acetonaemic cows, **1446**; desoxycorticosterone therapy, **1447**; aetiology in dairy cows, **1755**; puerperal acetonaemia, **1756**; cobalt treatment, **2327**; in pregnant ewes, associated with parasitism, **2348**; in British Honduras, **2776**; carbohydrate metabolism in cattle and intravenous glucose tolerance in healthy and diseased cows (including ketosis), **2961**; effect of movement on the glucose and acetone bodies of the blood in ketosis, **2962**; potassium chloride treatment, **2965**; in New Zealand, **3110**; incidence in a dairy herd, **3305**; and other deficiency diseases in cattle, **3306**.
KETOSTEROIDS. See Sex Hormones, androgens.
KIDNEYS.
General. Effect of reduction of cardiac output on renal circulation in dogs, **558**; use of artificial kidney, **562**; effect of bacitracin on renal function, **563**; artificial kidney, **1219**; development of the mesonephros in sheep; **1509**; blood supply of the mesonephros in sheep, **1510**; renal mechanism for urate excretion in Dalmatians, **1846**; clearance of some proteins by the dog kidney, **1848**; staining method for glomerular capillaries, **1880**; examination of horses' urine to establish functioning of kidneys, **2087**; nephric development and pronephros in sheep, **2147**; rapid measurement of intrarenal and other tissue pressures, **2148**; intrarenal pressure in relation to age, weight, blood pressure and sex, **2149**; function of the zona glomerulosa, **2153**; renal circulation in dogs, **3046**; structure of renal cells of the mouse as seen by electron microscope, **3724**.
See also Adrenal Gland; Urinary System; Vitamins, vitamin C.
Diseases. Glomerulonephritis in experimental brucellosis in dogs, **165**; renal cortical necrosis in sheep produced by alloxan, **181**; renal sulphathiazole concretions and nephrosis in a calf, **198**; hepatitis and nephritis in distemper, **378**; renal tumours in male hamsters treated with oestrogens, **454**; adenine causing enlarged kidneys in rats, **1119**; renin proteinuria in the rat, **1159**; effect of cortisone on experimental renal lesions produced by anaphylaxis, **2127**; kidney tumours in domestic animals, **2638**; nephritis in dogs, **3319**; diffuse glomerulonephritis in rabbits caused by horse serum, **3696**; mucolytic enzyme systems, hyaluronidase inhibitor and serum mucoproteins in patients with lipoid nephrosis and glomerulonephritis, **3697**.
See also Adrenal Gland; Corynebacterium Infection, in cattle; Stephanurus.
KIDNEY WORM. See Stephanurus.
KIDS. See Goats.
KIMBERLEY HORSE DISEASE. In Australia, **272**, **273**, **274**, **3412** and **3413**.
KLEBSIELLA. Localization of antigen in tissue cells, capsular polysaccharide of Friedlander's bacillus, type B, in the mouse, **1721**.
"KLEGGOLJE." See Repellents.

L

LABORATORIES. See Research Institutes.
LABORATORY ANIMALS. Feeding and breeding of laboratory animals, **2438**; book, breeding and care of laboratory animals, **2801**.
See also Dogs; Ferrets; Frogs; Guinea Pigs; Hamsters; Mice; Monkeys; Phalangers; Rabbits; Rats.
LABORATORY INFECTIONS. Safety measures in a TB. laboratory, **2410**.
See also Man, Diseases of Animals, Transmissible To and From.
LABURNUM. See Poisons and Poisoning, plants.
LACTATION. Artificial lactation and perfusion of bovine udder, **546**; artificial lactation in cows, **586**; plasmacytosis of the bovine udder during lactation, **832**; nature of the milk-ejection process, **2136**; haematology in lactating bitches, **2140**; galactopoietic effect of iodinated casein, **2152**; iron metabolism during suckling, **2385**; biochemistry of lactation, **2386**; effect of temperature on milk production, **2387**; heat production and cardio-respiratory activities during gestation and lactation in cattle, **2695**; drying off of cows and management of agalactia, **3006**; effect of implantation of stilboestrol tablets combined with iodoprotein feeding on induced lactation in goats, **3088**; factors influencing relationship between the secretion of milk and butterfat, **3342**; in heifers with oestrogens, **3740**.
See also Age; Manganese.
LACTIC ACID. In the vagina of rats, **3343**.
LACTOBACILLUS. From turkeys, **1617**.
LAMBS. See Copper; Sheep; Tailing; Youngstock Diseases.
LAMENESS. See Diseases, General.
LAMINITIS. Treatment with antihistamine, **1139**.
LAMPROPELTIS GETULUS. See Snake Venoms.
LAMSIEKTE. See Clostridium Botulinum Infection [Botulism].
LANCET FLUKE. See Dicrocoelium.
LARYNGO-TRACHEITIS, INFECTIOUS. In Australia, **3413**.
LASCOSIPHON KRAUSSIANUS. See Poisons and Poisoning, plant poisoning.
LATHYRUS. See Poisons and Poisoning, plant poisons.
LATRODECTUS. See Spiders.
LAW.
Australia. The Cattle Slaughtering and Diseased Animals and Meat Act, N.S.W., **1852**.
Austria. New federal law for control of infectious venereal diseases in cattle, **2656**.
Great Britain. Milk and dairies legislation, **570**; regulations relating to milk, **1178**; encyclopaediae of poisons law, **3777**.
Holland. Dutch meat inspection law No. 524 of 1919, **3065**; book, meat inspection law, **3438**.
Norway. A law case on "Kleggolje" a tabanid repellent, **2107**.
LEAD. Lead poisoning, **173-177**; lead absorption and ratio of large and small lymphoid cells, **1113**; porphyrin in urine, first symptom of lead poisoning, **1114**; lead as a nutritional hazard, **1790-1792**; subacute poisoning in cattle, **2670**.
LEATHER. See Bacillus Anthracis Infection [Anthrax].
LECITHINASE. Lecithinase activity of Clostridium haemolyticum toxin, **569**.
See also Immunology, antibodies.
LEEWARD ISLANDS. See Reports, Leeward Islands; Ticks, control.
LEISHMANIA INFECTION.
General. In man and dogs in China, **3197**; epidemiology of human and canine infection in Marseilles, **3525**; in Cyprus, **3766**.
In Dogs. Maclagan's thymol turbidity test in canine leishmaniasis, **1310**; diagnosis, **2548**; diagnosis and incidence in Algeria, **2879**; possible relationship between human and canine leishmaniasis in China, **3197**; in man and dogs, in Marseilles, **3525**.
In Man. Diagnosis of kala azar, **58**; visceral leishmaniasis in Palermo and Phlebotomus control by means of D.D.T., **1727**; canine leishmaniasis and human kala-azar in Peking, **3197**; in man and dogs in Marseilles, **3525**.
LEISHMANIA TROPICA. Structure of L. tropica under phase and electron microscope, **1664**.
See also Leishmania Infection.
LEPROSY. See Mycobacterium Leprae Infection [Leprosy].
LEPTOPSYLLA SEGNIS. Leptopsylla segnis, carrier of toxoplasmosis, **69**.
LEPTOSPIRA BALLUM. A discussion, **2533**.
LEPTOSPIRA BATAVIAE. A discussion, **2533**; in dogs, **3509**.
LEPTOSPIRA BOVIS. Pathogenicity for mice and g. pigs, **2866**.
See also Leptospira Infection, in cattle.
LEPTOSPIRA CANICOLA. A discussion, **2533**; in dogs, **3059**; in Indonesia, **3510**; fatal case in man, **3511**; three cases in man, **3512**.
See also Leptospira Infection, in man from animals.

LEPTOSPIRA GRIPPO-TYPHOSA. A discussion, 2533; an epidemic among pea pickers in Germany, 2871; in dogs, 3509.
LEPTOSPIRA ICTEROHAEMORRHAGIAE. A discussion, 2533; in dogs, 3509; mutations, 3513.
See also Leptospira Infection, in cattle, in swine.
LEPTOSPIRA INFECTION.
General. Leptospiroses, 678; leptospirosis in the guise of idiopathic aseptic meningitis, 985; inspection of meat infected with Leptospira, 1182; book, leptospirosis, 1570; lysis and agglutination in the diagnosis of leptospirosis, 1652; a new strain in Israel, 1969; problem in Israel, 1970; antagonism and enhancement of virulence of different species of Leptospira, 1978; a discussion, 2533; immunization of hamsters and dogs against experimental leptospirosis, 2870; in cattle and pigs in Western Australia, 3508; mutations in Leptospira, 3513.
See also Spirochaetes.
In Cattle. Bovine leptospiral vaccine, 679; antigenic similarity of bovine strains of Leptospira and L. pomona, 984; bovine leptospirosis, 1297; L. icterohaemorrhagiae infection in calves, 1971; in U.S.A., 2784; in Turkey, 2863; icterohaemoglobinuria in Algeria, 2864; in Algeria, 2865; in Australia, 3412; in Western Australia, 3508.
In Dogs. Transmission to man, 677; leptospiroses, 678; leptospirosis in dogs in Cracow, 1298; a review, 1650; in Indonesia, 1651; serological studies on canine leptospirosis, 1973; treatment, 1974; Canicola fever in man and dog, 1976; Canicola fever in Lower Franconia, 1977; in St. Kitts-Nevis, 2198; L. canicola in a girl and her puppy, 2253; in Kenya, 2456; in Denmark, 2534; examination of blood samples, 2868; immunization against experimental leptospirosis, 2870; types of canine infection, 3183; in Algeria, 3184; in Germany, 3509; in Indonesia, 3510.
In Horses. Agglutination and lysis of Leptospira by sera from horses with periodic ophthalmia, 2088.
See also "Mraclin" Disease.
In Man From Animals. Canicola fever in Bristol, 329; transmission of canine leptospirosis to man, 677; canicola fever in man in Brazil, 1299; canicola fever in man and dog in Germany, 1976; canicola fever in Lower Franconia, 1977; uveitis caused by a bovine Palestinian strain, 2252; L. canicola in a girl and her puppy, 2253; L. canicola infection in man, 2535; meningitis in a patient due to L. canicola, 2869; in a butcher in Palestine, treated with penicillin, 3185; chloromycetin treatment of swineherd's disease in Provence, 3186; fatal case of canicola fever in man, 3511; canicola fever, three cases in man, 3512.
In Swine. In U.S.S.R., 676; L. icterohaemorrhagie infection in piglets, 1972; in Western Australia, 3508.
Treatment and Control. In dogs, 1974; vaccination of dogs, 1975.
LEPTOSPIRA MITIS. Associated with swineherd's disease in Provence, 3186.
LEPTOSPIRA POI. A discussion, 2533.
LEPTOSPIRA POMONA. Antigenic similarity of bovine strains of Leptospira and L. pomona, 984; a discussion, 2533; agglutination by pig serum, 2867; swineherd's disease in Provence, 3186; in cattle and pigs in Australia, 3508.
LEPTOSPIRA SAXKOEBING. A discussion, 2533.
LEPTOSPIRA SEJROE. A discussion, 2533; in dogs, 3509.
LEPTOSTRONGYLUS. Experimental transmission of deer lungworm I. alpenae, 442.
LESPEDEZA. Haemorrhagic factor in mouldy lespedeza hay, 2713.
LETHAL FACTORS. See Heredity, lethal factors.
LEUCAEMIA. See Leucosis.
LEUCAENA GLAUCA. See Poisons and Poisoning, plant poisoning.
LEUCOCYTES. See Blood, corpuscles [white].
LEUCOCYTOZOON INFECTION. L. simondi infection in ducks in Northern Michigan, 67; in Canada, 3411.
LEUCOPENIA. Protective effect of cysteine on leucopenia induced by nitrogen mustard, 2367; feline infectious agranulocytosis, 2591; splanchnic removal of bacteria from blood stream of leucopenic rabbits, 3719.
LEUCOSIS.
General. Effect of ultrasonics on blood elements from leucaemic subjects, 557; sex hormones and leucaemia, 1063.
Avian. See Fowl Paralysis and Avian Leucosis.
In Cattle. Lymphoid leucosis in a calf foetus, 774; trials in cattle with nitrogen mustard gas, 2951.
In Dogs. Leucaemia in dogs, 775.
In Horses. Lymphatic leucosis in the horse, 1458.
In Rodents. Effect of adrenal grafting on transplanted lymphatic leucaemia in rats, 463; effect of thymectomy on spontaneous leucaemia in mice, 3285; influence of thymectomy on incidence of carcinogen-induced leucaemia in mice, 3286.
See also Leucosis, treatment.
Treatment. Hazards in the use of isotope C^{14} in leucaemia in mice, 129; radioactive phosphorus in polycythaemia and myeloid leucaemia, 193; effect of guanine analogue on lymphoid leucaemia of mice, 464; chemotherapy of reticulosis, 465; anti-leucaemic action of certain agents, 2317; trials of nitrogen mustard gas treatment of lymphadenosis in cattle, 2951; urethane treatment in mice, 2956.
LEUKERGY. Immunological significance, 3622; tuberculin provocation of leukergy as a test for active pulmonary TB., 3623; in anaphylactic states, 3624.
LEWISITE. Efficacy of various thiols as antidotes to lewisite, 1798.
LICE. Differentiation of tail-switch lice Haematopinus quadripertusus and H. eurysternus in Queensland, New Guinea, Solomon Islands and West Indies, 105; SK-9 against ticks and lice, 432; dips against sheep ked and sheep louse, 533; control of lice in Sweden, 1032; Rickettsia infections of lice, 1405; control in man with D.D.T., 2129.
See also Eomenacanthus Stramineus; Linognathus; Pediculus.
LICKS. For sheep, 477; phenothiazine-salt mixture given as a lick to sheep, 3011.
LIGHT. Effect on reproduction in ferrets and mink, 2174; determination of numbers of spermatozoa by measurement of light transmission, 2414.
LIMNAEA. Limnaea species, hosts of F. hepatica, 762; lifecycle of F. hepatica and of Limnaea (Galba) truncatula, 1734.
LINOGNATHUS. Observations on the bionomics of L. pedalis, 2298.
LIONS. Susceptibility of cubs to distemper, 3577.
LIPAEMIA. Blood, diseases.
LIPASE. Distribution of lipase in neoplastic rat liver, 459; piperonyl butoxide activation of pyrethrin esters by inhibition of lipase, 2131; effect of various experimental states on rat serum lipase, 3038.
LIPIDS. See Mycobacterium Tuberculosis, general.
LIPOIDS. Immunology, antibodies.
LIPOPROTEINS. And inhibition of streptolysin S by serum, 3619.
LIQUOID. Liquoid (sodium polyanethol sulphonate) for blood culture, 1212.
LISTERELLOSIS. See Erysipelothrix (Listeria) Monocytogenes Infection.
LITOMOSOIDES. Chemotherapy of experimental L. carcinii infection, 1421; effect of ultrasonic vibrations on filariasis of cotton rats, 3283.
LIVER.
General. Effect of age on rat liver regeneration, 466; metabolism and alkaline phosphatase excretion and relation to liver function, 848; needle biopsy in diffuse liver disease, 1111; alteration of nuclear and cytoplasmic components of the liver cell with thioacetamide, 2102; arterial perfusion of the liver in shock, 2117; influence of sex glands on pentobarbital detoxication by the liver, 2128; aspiration biopsy of the liver in cattle, 2190; effect of E. stiedae on succinic dehydrogenase activity of liver tissue in rabbits, 2263; chemical changes in mouse liver following single feeding of carbon tetrachloride, 2359 vital staining of damaged liver cells, 2360; effect of formalin fixation on activity of five rat-liver enzymes, 2384; effect of adrenal cortical steroids upon formation of carbohydrate by rat liver slices, 2704; distribution of blood vessels and bile ducts in the bovine liver as revealed by the vinylite-corrosion technique, 2720; Wall's liver biopsy for horses, 3312; effect of liver regeneration on tumour formation in rats fed 4-dimethyl-aminoazobenzene, 3660; structure of mouse hepatic cells as seen by the electron microscope, 3724.
See also Cholesterol; Choline; Phosphatase; Vitamins, vitamin C.
Bile and Bile Pigment. Quantitative determination of bilirubin, 609; formation of choleglobin and role of catalase in the erythrocyte, 2134; rapid screening test for detection of hyperbilirubinaemia, 3691.
See also Liver, general.
Diseases. Hepatic changes in piglets reared in cold and damp environment, 814; dietary hepatic necrosis, 1085 and 1086; somnolence and icterus (? Senecio poisoning) in horses, 1091; sampling by needle biopsy in diffuse liver disease, 1111; enzootic (toxaemic) jaundice in sheep, 1122; haemorrhage of the liver in TB. of cattle, 1253; tumours in mice injected with commercial food dyes, 1426; effect of cortisone on liver fibrosis in rats, 1498; inactivation of oestrone by rats in relation to dietary effects on the liver, 1757; turbidimetric gamma globulin determinations in hepatobiliary diseases, 1787; Sclerosis of liver veins in the horse, 2085; effect of vitamin B_{12} on hepatic injury produced by carbon tetrachloride, 2370; ictero-anaemia, eperythrozoonosis or anaplasmosis-like disease of swine proved to be caused by a filtrable virus, 2905; pathogenesis and differential diagnosis of jaundice, 2992; degeneration, necrosis and fibrosis, 3321.
See also Photosensitization; Hepatitis; "Mraclin" Disease; Neoplasms.
LIVER FLUKE. See Fasciola.

LIVESTOCK HYGIENE. See Hygiene, of livestock.
LOMIDINE. See Theileria Infection, treatment and control.
"LONE STAR TICK." See Ticks, Ixodidae.
LOUPING-ILL. Relationship of a Czech human encephalitis virus to louping-ill virus, **1361**; isolation of a Czech encephalitis virus from Ixodes ricinus, **1684**.
L-SUBSTANCE. Potentiation of sulphonamide by "L-substance", **523**.
LUCERNE. See Nutrition, general.
LUCILIA. Physiology and toxicology; composition and formation of granules in the malpighian tubules of L. cuprina larvae, **109**; L. sericata and L. cuprina attacking sheep in Australia, **2300**; blowfly strike in S. Africa, **2608**.
LUMPY SKIN DISEASE. In Swaziland, **2770**.
"LUMPY WOOL." See Actinomyces Infection.
LUNGWORMS. Epidemiology in cattle, **2629**; as a cause of allergic heart muscle lesions of sheep, **2942**.
See also Aelurostrongylus; Angiostrongylus; Dictyocaulus; Leptostrongylus; Metastrongylus; Muellerius; Protostrongylus; Strongyles; Trichostrongylus.
LUPIN. See Pregnancy, diagnosis.
LUPUS. Effect of A.C.T.H. and cortisone on lupus erythematosus and peri-arteritis nodosa, **1145**.
LYMPHADENITIS, CASEOUS. See Corynebacterium Infection, in sheep.
LYMPHADENOSIS. See Leucosis, treatment.
LYMPHANGITIS, EPIZOOTIC. See Histoplasma Farciminosum Infection (Epizootic Lymphangitis).
LYMPHATIC SYSTEM.
General. Lead absorption and ratio of large and small lymphoid cells, **1113**; studies on lymphocytes from persons treated with radioactive iodine, **1808**; effect of podophyllotoxin, colchicine, urethane and nitrogen mustard on respiration of normal and adrenal ectomized rat lymphatic tissue, **2155**; lymphoid tissue and its relation to normal lymphoid foci and to lymphomatosis, **3664**.
See also Immunology, antibodies.
Diseases. Lymphatic leucosis in the horse, **1458**; macromolecular particles obtained from human neoplastic and non-neoplastic lymph nodes, **1752**; TB. lesions in the mediastinal lymph nodes as cause of bloat in cattle, **2819**.
See also Corynebacterium Infection, in sheep; Histoplasma Farciminosum Infection [Epizootic Lymphangitis].
LYMPHOGRANULOMA. See Psittacosis-Lymphogranuloma group.
LYMPHOMA. See Neoplasms, treatment.
LYMPHOMATOSIS, AVIAN. See Fowl Paralysis and Avian Leucosis.
LYMPHOSARCOMA. See Neoplasms.
LYOPHILIZATION. See Freeze-Drying.
LYPEROSIA. See Siphona.
LYSINE. See Amino Acids.
LYSOZYME. Effect of orally and intra-arterially administered lysozyme of gastro-intestinal mucosa of dogs, **561**.

M

MADAGASCAR. See Encephalomyelitis, Porcine: Reports, Madagascar; Trichomonas Infection, in cattle.
MAGNESIUM. Magnesium values in blood of animals in Ireland, **215**; action of magnesium salts on isolated colon and uterus of horse, cow and rabbit, **517**; effect of magnesium on P^{32} and P^{32} partition in muscle, **535**; Hypomagnesaemia and ketosis in dairy cows, **808**; effect of ionic Mn and Mg on variation of Br. abortus, **971**; availability of the magnesium of grass to the ruminant, **1763**; influence of abnormal feeding on metabolism in cattle, **2079**.
See also Metabolism.
MALARIA. See Plasmodium Infection [Malaria].
MALAYA. See Rats; Rickettsia Infection, scrub typhus.
MAL DE CADERAS. See Trypanosoma Equinum Infection [Mal De Caderas].
MALFORMATIONS. See Teratology.
MALLEIN. See Pfeifferella Mallei Infection [Glanders].
MALONONITRILE. See Poisons and Poisoning, general.
MALPIGHIAN TUBULES. See Blowflies and Fleshflies.
MALTA. See Reports, Malta.
MAMMARY GLAND. Treatment of teat obstruction, **617**; mammary actinomycosis, **1295**; mammary growth of castrated mice grafted with anterior lobes of hypophyses and ovaries, **1425**; in vitro development of mouse mammary glands, **1518**; oral effectiveness of dimethyl ether of diethylstilboestrol and other steroid hormones on mammary glands of mice and rabbits, **2428**; influence of calcium on the isolated mammary gland, **2717**; growth in rats after gonadectomy and adrenalectomy, **2718**; behaviour of drugs introduced into the streak canal, **3005**; in the new-born male dog, **3035**.
See also Clover, Subterranean; Neoplasms; Udder.
MAMMARY TUMOURS. See Neoplasms.
MAMMEA AMERICANA. See Parasiticides.
MANDELIC ISOAMYL ESTER [MANDAVERM]. See Anthelmintics for horses.
MAN, DISEASES OF ANIMALS TRANSMISSIBLE TO AND FROM.
General. Animal diseases and health of man, **1454**; diseases of animals transmissible to man, **1455**; a septicaemia resulting from bite of West African squirrel, **1968**; book, **3113**.
Arthropod Parasites. See Dermanyssus; Mange, in cats.
Bacterial Diseases. Bubonic plague from cottontail rabbits, **1932**; Br. suis from human sputum, **1633**; Salmonella spp. from pork, **3425**.
See also Bacillus Anthracis Infection [Anthrax]; Brucella Infection, in man; Brucella Tularensis Infection [Tularaemia]; Food Hygiene; Leptospira Infection, in man from animals; Milk & Milk Products, bacterial content; Mycobacterium Tuberculosis Infection, in cattle, human infection; Pasteurella Pseudotuberculosis; Pfeifferella Mallei Infection [Glanders]; Salmonella Abortus-Equi Infection; Salmonella Ness-Ziona.
Fungous Diseases. See Actinomyces Infection; Histoplasma Capsulatum Infection.
Helminth Parasites. See Haplorchis.
Protozoan Diseases. See Leishmania Infection; Toxoplasma Infection.
Virus and Rickettsial Diseases. A respiratory disease in g. pigs transmissible to man, **3235**
See also Dermatitis, Ovine Contagious Pustular; Encephalomyelitis, Equine, eastern; Newcastle disease, general; Parotitis; Psittacosis; Rabies; Rickettsia Infection, general; Q fever; Stomatitis, Vesicular.
MANGANESE. Role in growth, reproduction and lactation of swine, **152**; effect of ionic Mn and Mg on variation of Br. abortus, **971**; deficiency in rats in relation to ataxia and loss of equilibrium, **3294**; poisoning in Morocco, **3698**.
MANGE.
General. Studies on the genus Demodex, **1408**; pathogenesis and diagnosis, **1731**; acaricidal properties of chlorinated insecticides such as D.D.T. and gammexane, **2618**; gammexane treatment of, **2619**; phenothiazine in treatment of demodectic mange, **2620**; in rabbits in Malta, **3414**.
In Cats. Sarcoptic mange in man and cat, **1042**.
In Cattle. In California, **2784**.
In Dogs. Toxicity of phenamidine in dogs treated for demodectic mange, **180**; penicillin in demodectic mange in dogs, **434**; benzene hexachloride treatment in follicular mange in dogs, **1733**; treatment in dogs with benzene hexachloride, **2929**.
In Horses. In Denmark, **2459**.
In Man. Sarcoptic mange in man and cat, **1042**.
In Poultry. See Cnemidocoptes.
In Swine. In Norway, **3771**.
MANURE. See Hygiene, of livestock; Strongyles.
MARBADAL. Mode of action, **1135**.
MARIE'S DISEASE. Pulmonary hypertrophic osteo-arthropathy [Marie's disease] in a dog, **1782**.
MARKING OF ANIMALS. See Zootechny.
MARMOTS. Susceptibility to leishmaniasis, **2548**.
MARSUPIALS. See Phalangers.
MASTITIS, BOVINE.
General. In South Africa, **275**, **276** and **899**; influence of dairy management on incidence, **901**; effect of bacterial infection of the quarters on milk yield in cows, **912**; relationship between machine milking and incidence and severity of mastitis, **1248**; electrical conductivity of milk for diagnosis of mastitis, **2182**; in the Netherlands, **2458**; traffic in mastitis cows in New York, **2474**; determination of bacteria causing mastitis, **2478**; economic importance in U.S.A., **3426**.
See also Mastitis, Bovine, treatment.
Staphylococcal Infection. Acute interstitial due to Staph. aureus, **7**; in goats, **294**; effect of aureomycin, **295**; penicillin preparations and sulphone singly or combined for staphylococcal mastitis, **910**; aureomycin treatment, **2808-2809**.
Streptococcal Infection. Experimental streptococcal mastitis in goats, **633** and **634**; pathogenesis, **913**; a general summary, **1249**; in cattle, **1907**; production of hyaluronidase in vitro by streptococci from mastitis cases, **2223**; role of Group G streptococci in mastitis, **2470**; serological differentiation of mastitis streptococci, **2472**; in Ayrshire, **2811**; systematic treatment and control, **2812**; control in Switzerland, **3134**; experimental infection in goats, **3442-3443**.
Other Infections. See Candida, Corynebacterium Infection, in cattle; Mycobacterium Tuberculosis Infection, in cattle.
Treatment and Control. Of streptococcal mastitis with penicillin, **8**; effect of aureomycin on Staph. pyogenes in the bovine udder, **295**; Sulphone and penicillin separately and combined, **297**; antibacterial substances in mastitis, **298**; with aureomycin, **299**; control of Str. agalactiae mastitis in cattle, **911**; response to penicillin, **914**;

MASTITIS, BOVINE—Treatment and Control—[cont'd.] with nitrofurazone, **1250**; with penicillin, **1579**; in vitro action of chloramphenicol and 4-4′ diamino-diphenylsulphone on organisms causing bovine mastitis, **1908**; treatment of mastitis by direct injection of penicillin, **2375**; New York State mastitis control programme, **2473**; suphanilamide treatment of Str. agalactiae infection in a herd, **2475**; use of sulphone and penicillin in the eradication of Str. agalactiae infection, **2476**; control of Str. agalactiae infection in herds by means of therapeutic treatment, **2477**; sensitivity to penicillin of microorganisms associated with bovine mastitis, **2479**; penicillin treatment of mastitis caused by cocci, **2480**; treatment of various forms with penicillin and 4-4′ diamino-diphenylsulphone, **2481**; streptomycin concentrations in milk following insertion of bougies into the udder, **2482**; with iodized oil, **2483**; distribution of liquids infused into the udder, **2484**; aureomycin treatment of staphylococcal mastitis, **2808-2809**; of streptococcal mastitis, **2812**; in New Zealand, **3110**; of streptococcal mastitis in Switzerland, **3134**; problems,, **3135**; efficiency of certain therapeutic measures, **3136**.
See also Candida.

MEAT INSPECTION. See Food Hygiene, meat inspection.

MEDICINE. See Books, medicine.

MEDULLA. See Nervous System, medulla.

MEIOSTAGMIN REACTION. Use of acetamide in the meiostagmin reaction, **1427**.

MELANOMA. See Neoplasms.

"MELARSEN." See Trypanosoma Infection, treatment.

MELIA AZEDARACH. See Poisons and Poisoning, plant poisoning.

MELIOIDOSIS. See Pfeifferella Whitmori Infection.

MELOPHAGUS. Dips against sheep keds and sheep lice, **533**; effect of air temperature on insecticidal action of insecticides and on migration of sheep ticks, **757**; high pressure sprays for control of sheep tick, M. ovinus, **1038**; effect on Merino sheep, **1729**.

MENGO-ENCEPHALOMYELITIS VIRUS. Isolation and immunological properties [monkeys], **76**; pathogenicity and physical properties, **77**; relationship with encephalomyocarditis, Columbia-SK and M.M. viruses, **78** and **79**; haemagglutination, **80**.
See also Viruses, neurotropic.

MENINGITIS. See Hard Pad Disease; Leptospira Infection, in man from animals; Mycobacterium Tuberculosis Infection, treatment; Nervous System, diseases; Viruses, neurotropic.

MENINGOCOCCI. Immunological properties of meningococci suspension in saccharose solution and inactivation of autolysin, **2605**.

MEPACRINE. See Eimeria Infection [Coccidiosis], treatment.

MERIONES SHAWI. Role in the aetiology of Moroccan Q fever, **2042**.

MESOMUCINASE. Examination of serum, urine and milk from pregnant and non-pregnant cows for mesomucinase and hyaluronidase, **3036**.

MESONEPHROS. Development of the mesonephros of the sheep, **1509**; blood supply of the mesonephros of the sheep, **1510**.
See also Pronephros.

METABOLISM. Metabolism stalls for wethers and steers, **255**; parathyroid gland and metabolic bone disease, **496**; electrolyte and water metabolism, **789**; metabolism and alkaline phosphatase excretion and relation to liver function, **848**; sodium, chlorine and potassium requirements of growing pigs, **1075**; carbohydrate metabolism and chronic diarrhoea, **1087**; physiological changes in intermediary metabolism in ruminants, **1160**; respiratory metabolism in poultry, **1162**; corneal metabolism and growth, **1423**; metabolic disturbances in dairy cattle, **1445**; effect of external temperature on metabolism of Leghorn cocks, **1503**; metabolism of the human placenta, **1512**; rates of turnover and biologic decay of chloride in dogs determined with isotope Cl^{36}, **1559**; use of labelled amino acids in the study of protein metabolism of normal and malignant tissues, **1753**; effect of thyroid- and of dinitrophenol-induced hypermetabolism on atherosclerosis in cholesterol fed chicks, **1785**; metabolism and toxicity of cyanides, **1797**; carbohydrate metabolism in sheep, **2077**; influence of abnormal feeding on calcium-, magnesium- and phosphorus metabolism in cattle, **2079**; plasma iron and saturation of plasma iron-binding protein in dogs, **2080**; function of the adrenal cortex, **2153**; brain metabolism in vivo in rats, **2371**; of thiamine in sheep, **2645**; of barbiturates, **2679**; of adrenaline, **2702**; adrenal cortex and water metabolism, **2703**; carbohydrate metabolism in cattle and intravenous glucose tolerance in healthy and diseased cows (including ketosis), **2961**; physiological dysfunctions and metabolic disorders—hypocalcaemia, hypomagnesaemia, hypophosphataemia and fog fever, **2975**; effect of growth hormone on water metabolism in hypophysectomized dogs, **3040**; progesterone and desoxycorticosterone metabolism in the rabbit doe, **3082-3083**; design and operation of metabolism units for nutritional studies in swine, **3090**; effect of starvation and feeding after starvation on metabolic activity in the rumen, **3307**; fluid balance, **3341**; studies on the carbohydrate metabolism of sheep, **3349**.
See also Amino Acids; Bones, formation; Cobalt; Copper; Helminth Parasites; Iron; Physiology; Nucleoproteins; Nutrition; Sodium Chloride; Tetany; Vitamins, vitamin B complex.

METABOLITES. See Pyruvic Acid.

METASTRONGYLUS. Correlation of host and symbiote evolution of the family Metastrongylidae, **116**; occurrence of M. saline in swine in Surinam, **2946**.

METHAEMOGLOBINAEMIA. See Blood, methaemoglobin.

METHIONINE. In selenium poisoning, **178**; role of l-methionine in virus propagation, **3611**.

METHYL BROMIDE. Effect on Bacillus anthracis, **524**.

METHYLCHOLANTHRENE. See Neoplasms, causation.

METHYLENE BLUE. Studies on relation of ram semen concentration and volume to fructose content, fructolysis and methylene blue reduction time, **2416**.

MEXICO. See Foot and Mouth Disease, control; Rabies, general; Rabies, in wild animals; Triatoma; Research Institutes, Mexico.

MICE. See Actinomyces Infection; Ascarids; Bartonella Infection; Bones, general; Brucella Melitensis; Corynebacterium Infection, general; Dengue Fever; Encephalomyelitis, Equine; Fat; Grey Lung Virus; Haemophilus Pertussis; Histoplasma Capsulatum Infection; Hormones; Immunology, general; Immunology, agglutination; Influenza, virus; Klebsiella; Leucosis, in rodents; Mammary Gland; Mycobacterium Tuberculosis Infection, transmission, treatment; Neoplasms; Pleuro-Pneumonia Group; Pneumonia, virus (mice); Pneumonitis, Feline; Poisons and Poisoning; Rabies, general; Rickettsia Infection, murine typhus; Schistosoma Infection; Sex Hormones, gonadotrophins; Streptococci, general; Streptococcus Aronson; Toxoplasma Infection; Trichomonas Infection, general; Viruses, neurotropic; Vitamins, vitamin A.

MICROCOCCI. Antibiotics produced by micrococci and streptococci, **915**.

MICROSCOPY. See Technique and Apparatus, microscopy.

MICROSPORUM. See Ringworm.

MILK FEVER. Aetiology and treatment, **158**; cholinesterase activity in grass tetany and puerperal paresis, **485**; pathogenesis, **487**; causes and treatment, **1448**; a review, **2347**; potassium chloride treatment, **2965**.

MILK AND MILK PRODUCTS.

General. Epidemic of scarlet fever through cows' milk, **231**; rat feeding tests with milk from cows fed toxic cottonseed meal, **513**; milk as semen diluent, **583**; effect of phenothiazine on colour of goat milk, **865**; effect of bacterial infection of the udder on milk yield, **912**; possible significance of milk and water in spread of virus infections, **1179**; experiments on milking technique, **1206**; neutralization and haemagglutination inhibition of swine influenza virus by serum of suckling pigs and dams' milk, **1397**; paratyphoid B epidemic from milk, **1941**; use of p-nitrophenylphosphate as substrate in the milk phosphatase test, **2407**; book, dairy science and milk hygiene, **3129**; milk production and B.C.G., **3142**; book, milk production and control, **3437**.
See also Food Hygiene, milk inspection; House Flies; Hyaluronidase; Immunology, maternal transfer; Lactation; Law, Great Britain; Milking Machines; Reports, United Kingdom.

Bacterial Content. Absence of tubercle bacilli in milk from tuberculin positive cows, **14**; Br. abortus ring test of milk, **319**; action of sulphanilamide and penicillin on Str. agalactiae in milk, **635**; incidence of tubercle bacilli in milk from infected cows, **638**; S. typhi infection transmitted by butter, **654**; estimation of coliform organisms in milk, **1523**; viability of M. tuberculosis in cheese, **2161**; excretion of tubercle bacilli in milk of tuberculous cows, **2488**; testing of milk for TB. and brucellosis, **3056**; examination of raw milk for bacteria pathogenic for man, **3364**.
See also Brucella Infection, in goats; Food Hygiene, milk inspection; Mycobacteria, general; Mycobacterium Tuberculosis, cultivation.

Chemical Composition. Effect of roughage and grazing on fat content of milk, **139**; chemical quality of milk, **572**; riboflavin of sow's milk, **806**; influence of toxopherols and cod-liver oil on the stability of milk, **1833**; amino acid composition of bovine colostrum and milk, **1835**; copper content, **3728**.
See also Milk and Milk Products, colostrum.

Colostrum. Vitamin A and C content of sows' milk and colostrum, **547**; component fatty acids of buffalo colostrum fat, **548**; plasmacytosis of the bovine udder during colostrum secretion and experimental cessation of milk, **1832**; factors affecting vitamin content, **1834**; amino acid composition of bovine colostrum and milk,

MILK AND MILK PRODUCTS—Colostrum—[cont'd.]
1835; absorption of colostrum globulin in the new-born animal, 3350; composition and function, 3715.
See also Immunology, maternal transfer; Nutrition, in cattle.
Excretion of Drugs. Penicillin milk levels in cows after intramammary administration, 832 secretion of radiocalcium in milk, 1502; contamination by insecticides, 2408; streptomycin concentrations in milk following insertion of bougies, 2482; contamination of milk from D.D.T. sprays applied to dairy barns, 3057; determination of D.D.T. in milk in barns after spraying, 3058; tests for the presence of alcohol in milk following feeding with silaged pomace, 3059; excretion of D.D.T. and T.D.E. in cows' milk, 3366.
MILKING MACHINES. Factors affecting rate of machine milking, 1207; relationship of machine milking and mastitis, 1248.
MIMOSINE. See Poisons and Poisoning, plant poisoning.
MINERALS. See Nutrition.
MINK. Effect of light on reproduction, 2174.
See also Absidia Lichtheimi; Clostridium Botulinum Intoxication [Botulism]; Clostridium Carnis; Digestive System, diseases; Nutrition; Salmonella Typhi-Murium; Urinary System, diseases, urine; "Yellow Fat" Disease.
MITES. See Cnemidocoptes; Dermanyssus; Epidermoptes; Mange; Pneumonyssus; Raillietia Auris; Rickettsia Infection, scrub typhus; Rivoltsia; Scheloribates Laeirgatus; Schöngastia Indica; Sheep Scab; Trombicula.
M.M. VIRUS. See Viruses, neurotropic.
MOLASSES. See Nutrition, swine.
MOLLUSCACIDES. See Parasiticides, General.
MOLYBDENUM. Deposition and excretion of phosphorus in steers on high molybdenum and copper diets, 1759.
MONIEZIA. Scheloribates laevigatus as host, in Quebec, 2308.
MONILIA. See Ringworm.
MONKEYS. See Echinococcus; Encephalomyelitis, general; Mengo Encephalomyelitis Virus; Newcastle Disease; Plasmodium Knowlesi; Poliomyelitis; Shigella Flexneri; Trypanosoma Vivax Infection; Vitamins, vitamin C. vitamin E.
MONOFLUOROACETIC ACID. See Poisons and Poisoning, inorganic.
MOOSE. Nutritive value of woody plants used as food for moose, 1067.
MORAEA ZAMBESIACA. See Poisons and Poisoning, plant poisoning.
MOREL. See Poisons and Poisoning, plant poisoning.
MOROCCO. See Aujeszky's Disease; Manganese; Reports, Morocco; Rickettsia Infection, Q fever.
MOSQUITOES. Natural history of mosquitoes, 1575; D.D.T. resistance, 3263.
See also Aedes; Anopheles; Culex.
"MOSSJUKA." See Cobalt.
MOTHS. See Hylesia; Porthetria.
MOULDS. Mould rot in eggs, 1183; chemical agents for control of moulds on meat, 2409; book, yeasts and moulds, 2524.
See also Committees, Conferences and Congresses; Mouldy Fodder; Penicillium; Ustilago.
MOULDY FODDER. Acute poisoning in farm animals, 1800; poisoning in horses from mouldy fodder, 2674; haemorrhagic factor in mouldy lespedeza hay, 2713.
See also Cornstalk Disease; Ustilago.
"MRACLIN" DISEASE. In Yugoslavia, 1460.
MUCIN. See Histoplasma Capsulatum Infection.
MUCOIDS. See Immunology, agglutination [haemagglutination].
MUCUS. See Genital System, oestrous cycle; Pregnancy, diagnosis.
MUELLERIUS. Treatment in sheep and goats with emetine hydrochloride, 1420.
MULES. See Haemolytic Diseases; Immunology, maternal transfer.
MULGA. See Acacia.
MULTIPLE BIRTHS. Monozygotic twins, 1201; monozygotic cattle twins, 2173; comparison of blood constituents in identical and fraternal twins, 3043.
See also Blood, groups.
MUMPS. Serological relationship between mumps and Newcastle disease viruses, 1017; contagious parotitis in animals and man, 1015.
MUNDULEA SERICEA. Poisons and Poisoning, plant poisoning.
MUSCA CONVEXIFRONS. Transmitting thelariasis in the U.S.S.R., 1051-1053.
MUSCA DOMESTICA. See Houseflies.
MUSCLES. Effect of magnesium on P^{31} and P^{32} partition in muscle, 535; bones, muscles and vitamin C, 807; isolation of myofibrils by enzimatic method, 1170; chemical and enzymic alterations in muscles in exprimental (vitamin E) dystrophy, 2338; movement of water in interstitial tissue and in muscle removed from the body, 2400.
MUSTARD GAS. Nitrogenized mustard gas in the treatment of spontaneous mouse leucaemia, 130; human hypersensitivity to mustard gas like compounds, 1476; effect on lymphatic tissue of normal and of adrenalectomized rats, 2155.
See also Nitrogen Mustard; Rabies, treatment and control.
MYCOBACTERIA, GENERAL. Action of oxidation products of substituted o—phenylene diamines on M. smegmatis and M. tuberculosis, 17; effect of Aspergillus fumigatus on acid fastness, 674; action of M. johnei and M. tuberculosis on the colour of red blood cells, 3148; mycobacteria occurring in milk, 3365; identification of mycobacteria, 3431; antigenic relationship of erythrocyte adsorbable fractions of some mycobacteria, 3463.
MYCOBACTERIUM BUTYRICUM. Demyelination in g. pigs in allergic encephalomyelitis caused by brain emulsion containing M. butyricum, 1030; a lipolytic enzyme in reactive histiocytes of g. pigs with experimental encephalomyelitis, 3557.
MYCOBACTERIUM JOHNEI INFECTION [JOHNE'S DISEASE]. A study, 23; atypical case in a cow, 311; standardization of vaccine and johnin, 312; epidemiology and control in Victoria, 649; a discussion on control, 650; histological changes in skin of cattle caused by intradermal johnin test, 935; vaccination against Johne's disease, 936; allergic response to johnin and tuberculin of various skin regions of cattle, 1269; johnin, 1270; Johne's disease without visible lesions, 1608; effect of streptomycin and chemotherapeutics on M. johnei in vitro, 1609; isolation of M. johnei in primary culture, 2234; in the Netherlands, 2458; acid-alcohol resistance of M. johnei, 2492; cultivation of 14 strains, 2493; Johne's disease in cattle and leprosy in man, 2494; in Ceylon, 2766; a survey, 2831; action of streptomycin on Johne's bacillus, 2832; p-aminosalicylic acid treatment, 2833; action on colour of red cells, 3148; varieties from sheep, 3465.
MYCOBACTERIUM LEPRAE INFECTION [LEPROSY]. Comparative study between Johne's disease in cattle and leprosy in man, 2494; haemagglutination of tuberculin sensitized sheep cells in Hansen's disease, 2830.
MYCOBACTERIUM SMEGMATIS. See Mycobacteria, General.
MYCOBACTERIUM TUBERCULOSIS.
General. Fluoromicroscopy of tubercle bacilli, 305; M. tuberculosis var. muris, a new variety, 307; enzyme treatment of sputum for isolation of tubercle bacilli, 925; lipid constituents of M. tubercle, 931; virulence and immunizing properties of various strains, 933; improved technique for the demonstration of tubercle bacilli, 1208; diagnosis in dogs by egg medium culture and differentiation of types, 1259; intermittent excretion of bacilli in pulmonary TB., 1260; a staining method for differentiation of living and dead tubercle bacilli, 1927; viability in cheese, 2161; freeze-drying of cultures, 2180; fluorescence microscopy, 2185; excretion in milk of tuberculous cows, 2488; virulence and immunizing capacity of various strains, 2490; isolation, 2821; staining, 2823; dissociation of the tubercle bacillus, 3146; action on colour of red cells, 3148; virulence of strain 607, 3150; use of Chinese hamsters in the study, 3452; survival in sewage treatment processes, 3731.
See also Mycobacteria, General.
Avian Type. Pathogenicity of avian type tubercle bacilli from human infection, 639; specificity of avian type tuberculin, 1268; electron microscopy of avian type M. tuberculosis, 1593; nucleoproteins of avian tubercle bacilli, 1594; biological characteristics of avian type, 3147.
See also Crows; Mycobacterium Tuberculosis Infection, in poultry.
Bovine Type. See Mycobacterium Tuberculosis Infection, human infection.
Cultivation. Streptomycin sensitivity of tubercle bacilli in vitro, 16; egg-yolk agar medium for tubercle bacilli resistant to streptomycin and P.A.S., 598; in egg yolk media, 926; use of trisodium phosphate for isolation of M. tuberculosis, 1210; diagnosis in dogs by egg medium culture and differentiation of types, 1259; Dubos' medium in diagnosis, 1262; effect of subtilin on growth, 1264; methods of multiplication of M. tuberculosis, 1590; semi-synthetic media, 1591; recovery of tubercle bacilli from sewage, 1592; use of Dubos' medium for cutivation from milk, 1873; effect of bovine plasma on growth, 1925; growth in liquid media, 1926; effect of water of condensation from egg media on growth, 2822; effect of wetting agents on growth, 3151; study in Dubos' medium, 3454; cultivation from sputum samples, 3460.
Human Type. Varieties of M. tuberculosis from human pulmonary TB in Ireland, 923; effect of bovine plasma fractions on growth of M. tuberculosis var. hominis, 1925; growth in liquid media, 1926.

MYCOBACTERIUM TUBERCULOSIS—[cont'd.]

Inhibition. By o-phenylene diamines, 17; with thiosemicarbazides and thiosemicarbazones in vitro, 18; inhibition of growth by vitamin analogues, 309; tuberculostatic activity of blood and urine from animals given gliotoxin, 413; tuberculostatic action of P.A.S. derivatives and similar substances, 929; tuberculostatic action of quinoline derivatives, 1596; effect of organic acids on tubercle bacilli, 1597; in vitro effect of vitamin K analogues, 1598; bactericidal effect of surface active agents, 2233; effect of "tween 80" in vitro on bacteriostatic activity of twenty compounds, 3461.

See also Mycobacterium Tuberculosis, cultivation.

In Milk. Absence of tubercle bacilli from milk of tuberculin positive cows, 14; incidence of tubercle bacilli in milk from infected cows, 638; testing of milk for TB. and brucellosis, 3056.

Pathogenicity. Pathogenicity of the tubercle bacillus, 13; pathogenicity of avian type tubercle bacilli from human infection, 639; virulence and immunizing capacity of various strains, 2490; analysis of virulence, 3453.

Resistance to Drugs. Streptomycin resistance of tubercle bacilli, 15; streptomycin resistance, 310; medium for tubercle bacilli resistant to streptomycin and P.A.S., 598; resistance to chemotherapeutics, 928; acid-alcohol resistance, 2492; streptomycin-resistant strains, 3145.

MYCOBACTERIUM TUBERCULOSIS INFECTION.

General. In Australia, 12; changes in serum polysaccharide content in TB., 303; resistance to TB., 640; effect of bacterial spreading factors on TB., 642; TB. in farm animals in Czechoslovakia 1256; TB. of the common crow, 1585; biochemical studies, 1586 and 1924; safety measures in a TB. laboratory, 2410; in the Netherlands, 2458; in Germany, 2460; in Ceylon, 2766-2767; in Nyasaland, 2769; pathology, 2820; in British Guiana, 3416; in East Africa, 3418; in Zanzibar, 3420.

See also Food Hygiene, meat inspection; Mycobacterium Tuberculosis, pathogenicity; Rinderpest, immunology.

In Cats. In dogs and cats, 1584.

In Cattle. The story of bovine tuberculosis, 277; incidence in slaughter cattle, 637; in Fiji, 1235 and 1236; haemorrhage of the liver in TB. of cattle, 1253; TB. of the brain in cattle, 1254; infection of cattle with human type tubercle bacilli, 1257; in Uruguay, 1583; report of the Swiss commission on cattle immunization, 1602; in Finland, 1919; in Canada, 2197; epidemiology in Turkey, 2228; in the Netherlands, 2458; excretion of tubercle bacilli in milk of tuberculous cows, 2488; in U.S.A., 2784; primary TB. of the vulva in a cow, 2818; lesions in the mediastinal lymph nodes causing bloat, 2819; in Northern Rhodesia, 3421; in Denmark, 3449; so-called skin TB., 3458; in Eire, 3769; in Sweden, 3772.

See also Mycobacterium Tuberculosis Infection, immunology (B.C.G.).

In Dogs. TB. diagnosis in dogs by egg medium culture, 1259; in dogs and cats, 1584.

Diagnosis. TB. diagnosis in dogs, 1259; Dubos' medium in diagnosis of TB., 1262; a serological test in cattle, 3139; complement-fixation reaction, 3140.

See also Leukergy.

Human Infection. Pathogenicity of avian type tubercle bacilli from human infection, 639; varieties of M. tuberculosis in human pulmonary TB. in Ireland, 923; infection of cattle with human type tubercle bacilli, 1257; bovine TB. in man in Amsterdam, 1258; intermittent excretion of bacilli in pulmonary TB., 1260; chemotherapy of TB. in man, 1261; streptomycin in tuberculous meningitis in children, 1600; B.C.G. statistics in Danish schools, 1603; effect of war-time nutrition on arteriosclerosis, cardiosclerosis, TB. and diabetes, 1754; control of bovine type TB. in man in Sweden, 1920; primary streptomycin-resistant TB. in the newborn child, 1923; in sputum collectors, 3459.

See also Mycobacterium Tuberculosis, human type; Mycobacterium Tuberculosis Infection, immunology [B.C.G.].

Immunology [General]. Changes in serum polysaccharide content in TB., 303; haemagglutination test in TB., 304; immunization of mice, 308; vaccination, 646; haemagglutination reaction, 924; flocculation reaction indicating state of activity, 927; virulence and immunizing properties of various strains of tubercle bacilli, 933; allergy and immunity, 1265; Dubos-Middlebrook haemagglutination reaction using a purified tuberculin, 1587; studies with irradiated vaccines, 1601; report of Swiss commission on cattle immunization, 1602; virulence and immunizing capacity of various strains, 2490; influence of specific fermented antigen on TB., 2826; immunization of mice with ultraviolet-killed vaccines, 2828; loss of protection by vaccination following cortisone treatment in mice experimentally infected, 2829; haemagglutination of tuberculin sensitized sheep cells in leprosy, 2830; a serological test for diagnosis in cattle, 3139; complement-fixation test for diagnosis in cattle, 3140; haemolytic modification of the haemagglutination test for antibodies against tubercle bacilli antigens, 3457.

Immunology [B.C.G.]. Vaccination of cattle, 20; vaccination of man, 21; immunological aspects of B.C.G. vaccination, 101; experimental studies, 306; in France, 643; disease in vaccinated individuals, 644; "negative phase" following vaccination, 645; loss of vitality of B.C.G. cultures grown on Sauton's medium, 647; immunizing capacity of B.C.G., 648; effect of variation of pH in B.C.G. fluid cultures, 932; optimal dose, 934; variations in the virulence, 1266; size of organisms in vaccine in relation to dosage, 1267; Danish statistics, 1603; an attempt to distinguish between vaccination-allergy and superinfection-allergy, 1604; risks of vaccination, 1606; B.C.G. in silicosis, 1607; prophylaxis, milk production and B.C.G., 3142; properties of freeze-dried B.C.G., 3152; lyophilized B.C.G., 3462; time of survival on the skin and body of g. pigs after scarification, 3463.

See Mycobacterium Tuberculosis Infection, tuberculin test.

In Poultry. Incidence in South Australia, 921; incidence in New South Wales, 922; use of chicks in the evaluation of anti-tuberculous agents, 1595.

In Swine. In Kenya, 2456; sensitivity of pigs, 2824; possible transmission of TB. by crystal violet swine fever vaccine, 3229.

Transmission. To phalangers, 22; in mice, from infection via the nose, 1922.

See also Mycobacterium Tuberculosis Infection, in swine.

Treatment and Control. Streptomycin resistant tubercle bacilli developing during treatment, 15; factors affecting sensitivity of tubercle bacilli to streptomycin in vitro, 16; with thiosemicarbazones and thiosemicarbazides, 18 and 19; effect of cortisone on TB. in mice, 641 thiosemicarbazones, 930; control, 1255; chemotherapy in man, 1261; effect of dihydrostreptomycin—P.A.S., 1263; control by breeding, 1588; use of chicks in the evluation of anti-tuberculous agents, 1595; streptomycin and tuberculin in treatment, 1599; adjuvants to streptomycin in tuberculous meningitis in children, 1600; a plan for control, 1921; effect of 4-acetylaminobenzal thiosemicarbazone (tibione) on experimental infection in g. pigs, 2231; effect of cortisone on development of lesions and modification by streptomycin, 2232; prophylactic treatment of breeding stock, 2489; in Indonesia, 3141; with sulphetrone, 3143-3144; in Malta, 3414 in Denmark, 3450; in some European countries, 3451.

See also Mycobacterium Tuberculosis Infection, human infection, immunology [B.C.G.], tuberculin test.

Tuberculin and Tuberculin Test. Cultivation of chick embryo tissue in the presence of Petragnani's integral type anatuberculin, 102; lack of sensitization after tuberculin test, 302; specificity of avian type tuberculin, 1268; allergic response to johnin and tuberculin of various skin regions of cattle, 1269; Dubos-Middlebrook haemagglutination reaction using a purified tuberculin, 1587; effect of intravenous injection of tuberculin on leucocytes of normal and tuberculous rabbits, 1589; streptomycin and tuberculin in the treatment of experimental TB. in g. pigs, 1599; is increased tuberculin reaction in a B.C.G. vaccinated person indicative of infection with a virulent tubercle bacillus? 1605; keeping properties of mallein and tuberculin B, 1718; tuberculin testing, 1928; non-specific reactions, 1929; the nature of tuberculin, 1930; response of tuberculin skin test to A.C.T.H. and cortisone, 2229; failure of A.C.T.H. and cortisone to suppress tuberculin skin reactions, 2230; production of bovine tuberculoprotein, 2491; in Holland, 2782; certain amino-acids in tuberculin protein fractions, 2825; erythrocyte destruction in tuberculous animals following tuberculin injection, 2827; haemagglutination of tuberculin sensitized sheep cells in leprosy, 2830; fluctuation of tuberculin reaction in different areas, 3153; effect of benadryl hydrochloride on tuberculin reaction, 3154; action of ascorbic acid on tuberculin-sensitivity, 3155; description of experiments, 3455; error in estimation of sensitivity, 3456; so-called skin-TB. in cattle and its relation to tuberculin tests, 3458; in Norway, 3770.

See also Leukergy; Milk and Milk Products, bacterial content; Technique and Apparatus, general.

MYCOSES. See Fungi.

MYIASIS. Myiasis of the hoof in cattle in North Celebes, 1725; medical and veterinary importance of horse-flies, 2614.

MYOCARDITIS. See Circulatory System, diseases.

MYODYSTROPHIA. In Kenya, 2456.

MYOFIBRILS. See Muscles.

MYOHAEMOGLOBINURIA, PARALYTIC. Vitamin B_1 treatment, 3673.
MYOTUS LUCIFUGUS. See Bats.
MYXOEDEMA. And goitre in newborn goats, 2093.

N

NAGANA. See Trypanosoma Brucei Infection [Nagana].
NAGANOL. Mode of action, 340; adrenal insufficiency after suramin treatment, 527; action of suramin and antrycide on enzymes, 835.
See also Trypanosoma Infection, treatment.
α-NAPHTHYL THIOUREA [ANTU]. See Alpha-Naphthyl Thiourea [Antu].
NARCOSIS. See Anaesthesia.
NASO-LACHRYMAL DUCT. See Anatomy.
NECROSIS. See Liver, diseases; Pancreas.
NEGRI BODIES. See Rabies.
NEMATODES. Nematode infestation in cattle in the Belgian Congo, 120; biological significance of haemoglobin in nematodes, 121; intermediary metabolism of nematodes, 1059; nematode dermatitis in cattle associated with Rhabditis, 1411; species diagnosis by egg characteristics, 1416; survival on pasture of free-living stages of sheep nematodes, 1741; staining method, 1878; rapid staining of, 1879; physiology and cultivation in artificial media, 2627; uptake of phenothiazine labelled with sulphur-35 by tissues of nematodes and their hosts, 2950.
See also Acuaria; Ancylostoma; Ascarids; Bunostomum; Filariae; Gnathostoma; Heterakis; Hyostrongylus; Lungworms; Oesophagostomum; Onchocerca; Ostertagia; Phenothiazine; Setaria; Spirocerca; Strongyles; Subulura; Syngamus; Trichinella.
NEMATODIRUS. Parasitic gastro-enteritis in sheep, 2062; causing parasitic enteritis in sheep in the Argentine, 3642.
See also Strongyles.
NEOARSPHENAMINE. In acute eperythrozoonosis of Swine, 332; in blackhead, 347.
NEOMYCIN. Antibacterial action of neomycin and furadroxyl, 520; properties of neomycin, 833; effect of bacteria, viruses and protozoa, 1491; results of clinical use, 2119.
See also Pasteurella Septica.
NEOPLASMS.
General. Mammary tumour agent in high cancer strain male mice, 131; alteration in the structure of a polarographically reducible substance in carcinogenesis, 134; production of malignancy in vitro, 136; virus-induced papilloma—carcinoma in cotton-tail rabbit, 451, 781 and 782; effect of human influenza virus on incidence of lung tumours in mice, 455; effect of growth inhibitor on tissue cathepsins of tumour-bearing rats, 461; effect of adrenal grafting on transplanted lymphatic leucaemia in rats, 463; intra-ocular transplantation of tumour tissue, 468; aetiology of malignant tumours, 779; in invertebrates, 780 transplatation of mouse neuroblastoma, 784; non-neoplastic lesions in ducklings caused by virus of Rous sarcoma, 786; Staph. aureus injections against fowl sarcoma, 787; comparative specific gravities of normal and tumour tissue, 1064; transmission of mouse sarcomata with lyophilized tumour tissues, 1065; number of litters and incidence of mammary tumours in mice, 1424; use of acetamide in the meiostagmin reaction, 1427; cultural properties and pathogenicity of certain micro-organism obtained from neoplasms, 1428; pink-eye gene and susceptibility to fibro sarcoma in mice, 1751; macromolecular particles obtained from human neoplastic and non-neoplastic lymph nodes, 1752; use of labelled amino acids in the study of protein metabolism of normal and malignant tissues, 1753; virus theory of cancer, 2070; lactic dehydrogenase activity of certain tumours, 2072; single cell autographs of bone marrow and blood from rats using radioactive phosphorus, 2073; propagation of mouse tumours by means of dried tissue, 2953; freezing and desiccation of mouse tumours, 2954; cultivation in vitro of frozen and desiccated mouse tumour tissue, 2955; chromatographic studies on separation of virus from chicken tumour I, 2957-2958; comparative stability of the agent of chicken tumour I in citrate and phosphate buffers at 37°C, 3288; effect of Rous sarcoma on endocrine organs of cocks and hens, 3289; aetiology, 3653; dynamics of parenchymatous embolism in relation to dissemination, 3655; effect of tumours on antibody levels in mice, 3656; effect of foster nursing on growth of transplantable tumour, 3657; studies on mammary tumours in mice, 3658; phosphorylated intermediates in glycolysis of analogous mouse mammary tumours of dba and C3H strains, 3659; behaviour of virus from chicken and duck tumours in embryonated eggs, 3661.
See also Books, neoplasms; Eyes; Fowl Paralysis and Avian Leucosis; Granuloma; Leucosis.
Causation. Unsuccessful attempt to produce tumours in dogs and rabbits with methylcholanthrene, 135; effect of pressure on sarcoma, 453; photochemical formation of carcinogens from skin fats, 457; effect of dietary fat on mammary carcinoma formation in mice, 458; distribution of lipase in paradimethylaminoazobenzene induced neoplasms in the rat liver, 459; ovary-spleen transplantation in rats and tumour formation, 467; attempt to detect a mammary tumour agent in strain C mice by X radiation, 1063; liver tumours in mice injected with commercial food dyes, 1426; virus theory of cancer, 2070; a study on cancer, 2313; carcinogenic and anticarcinogenic substances, 2639; tumours resulting from parthogenesis induced by plant hormones in albino rats, 3284; modern views on aetiology, 3653; effect of liver regeneration on tumour formation in rats fed 4-dimethyl-aminoazobenzene, 3660; investigations of the properties of agents causing fowl tumours, 3662.
See also Leucosis, in rodents.
Immunology. Titration of the milk agent virus in milk and mammary gland cells, 460; spread of pigment and immunity reactions, 785; titration curve of the agent of chicken tumour, 2314.
Spontaneous. Spontaneous carcinoma of the skin of a ferret, 452; plasma-cell myelomatosis in dogs, 776; venereal (Sticker's) sarcoma in dogs, 777 and 778; development of spontaneous mammary tumours in agent-free mice, 783; epithelioma of the nasal sinuses of the horse, 1422; hereditary aspect of eye cancer in Hereford cattle, 1750; cancer problem in animals, 2069; renal neoplasms in domestic animals, 2638; in small animals, 3640-3651; cutaneous sarcoma-like lesions in the horse caused by agent of bovine papilloma, 3652; spontaneous gastric neoplasia in mice, incidence and genetic linkage, 3654.
Treatment. Effect of vitamins on tumours, 132; effect of 8-azaguanine on growth of carcinoma, sarcoma, lymphosarcoma and melanoma in animals, 133; renal tumours in male hamsters treated with oestrogen, 454; in rats treated with pituitary growth hormone, 456; chemotherapy, 465; cortical steroids in the treatment of cancer, 1429; effect of X-rays on the agent of Rous sarcoma, 1430; experimental cancer therapy, 2074; effect of podophyllin, podophyllotoxin, alpha-peltatin, beta-peltatin and quercetin on sarcoma, 2075; effect of alpha-peltatin, beta-peltatin, podophyllotoxin on lymphomas and other transplanted tumours, 2076; carcinogenic and anticinogenic substances, 2639; a tumuor-retarding agent produced by A. fumigatus, 3287.
See also Fowl Paralysis and Avian Leucosis.
Venereal. Venereal granuloma in dogs, 1061; a transmissible venereal tumour in dogs, 3212; venereal tumours in dogs and bitches in France, 2952.
NEOPYRITHIAMINE. Inhibiting growth of M. audouini, 2859.
NEOTODORIT. In cattle coccidiosis, 2550.
NEPHRITIS. See Kidneys, diseases.
NEPHROSIS. See Kidneys, diseases.
NERIUM OLEANDER. See Poisons and Poisoning, plant poisoning.
NERVOUS SYSTEM.
General. Influence of histamine on anti-histaminic nerve block, 207; fate of nerves of deciduous teeth, 536; neurologic evaluation of the cutaneous histamine reaction, 855; virus content of central nervous system of unweaned piglets following inoculation with Teschen disease virus, 1366; experimental D.D.T. poisoning with reference to the nervous system, 1474; sensory integration, 1500; attempts to produce Negri bodies in embryonic nervous tissue of mice in the absence of rabies virus, 2001; innervation of cornea, 2143; diet for rats to facilitate dissection of spinal, peripheral and autonomic nerves, 2156; staining of neuroglia with silver, 2450; conditioned reflexes and neuron organization, 2723; physiology of the nervous system, 3722; postnatal development of inferior dental nerve in the cat, 3723.
See also Acoustics; Hypothalamus; Pineal Body; Technique and Apparatus, staining; Viruses, nurotropic.
Brain. Brain metabolism in vivo, 214; cerebellar disorders in lambs, 1102; TB. of the brain in cattle, 1254; role of hypophyseal-hypothalamic system and haematopoiesis, 1469; role of the cerebral cortex in the apperception of pain, 1822; brain metabolism studies in vivo, 2371; concentration of streptomycin in the brain of cats after intoxication, 3329; morphology of the brain in an African elephant foetus, 3361.
See also Blood-Brain Barrier; Books, anatomy; Callliphora; Hypothalamus; Nervous System, diseases; Viruses, neurotropic.
Cerebrospinal Fluid. Collection and examination in cattle, 2189; blood-brain barrier in the horse, calcium and potassium content of cerebrospinal fluid and blood serum, 3026-3027.
Diseases. Leptospirosis in the guise of idiopathic aseptic meningitis, 985; demyelination in g. pigs in allergic

NERVOUS SYSTEM—Diseases—[cont'd.]
encephalomyelitis caused by brain emulsion containing M. butyricum, **1030**; cerebellar disorders in lambs, **1102**; TB. of the brain in cattle, **1254**; neuroparalysis in dogs after antirabic vaccination, **1348**; neurological complications of undulant fever, **1950**; isolation of a neurotropic virus from a dog's brain, a child's stool and from a pig, **2002-2004**; tetanus intoxication of the brain stem in rabbits, **2247**; distribution of brain lesions in rats caused by azide, malononitrile, plasmocid and dinitrophenol poisoning in rats, **2371**; S. abortus-equi causing spinal paralysis in horse, **2505**; pathology of the nervous system, **2667**; bulbar paralysis and botulism in horses, **3175**; paralysis in relation to magnesium-potassium antagonism, **3668**; effect of histamine and antihistamine on neuro-allergic diseases, **3701**.
See also Aujeszky's Disease; Distemper; Hard Pad Disease; Encephalitis, Canine; Encephalomyelitis, Equine; Encephalomyelitis Japanese B; Encephalomyelitis, Porcine; Hypothalamus; Mengo-Encephalomyelitis Virus; "Maclin" Disease; Poliomyelitis; Rabies; Spasmophilia; Viruses, neurotropic.
Medulla. Morphology of emetic chemoreceptor trigger zone in cat medulla oblongata, **3726**.
NETHERLANDS. See Echinococcus; Fowls, virus diseases; Insemination, Artificial, general; Law, Holland; Mycobacterium Tuberculosis Infection, human infection; Newcastle Disease; Pasteurization; Reports.
NEUROGLIA. See Nervous System, general.
NEUROLYMPHOMATOSIS. See Fowl Paralysis and Avian Leucosis
NEURONS. See Nervous System, general.
NEW-BORN ANIMALS. Chemical composition of newly born mammals, **3030**.
See also Mammary Gland; Youngstock Diseases.
NEWCASTLE DISEASE.
General. And Fowl Plague, in France, **86**, **1372** and **1373**; in England, a review, **87**; in Italy, **88**; and egg production, in California, **89**; resistance of virus to formaldehyde fumigation, **90**; epidemiology, **384**; in Algeria, **385**; report of committee on, **386**; a review, **387**; haemolysis by the virus of, **389**; technique for isolation of virus of infectious bronchitis and Newcastle disease, **390**; study of virus in Tunisia, **728**; conjunctivitis in man caused by Newcastle disease virus, **735**; in Cyprus, **900**, **1231** and **3766**; in U.S.A., **901**, **1568**, **2029**, **2204**, **3426** and **3775**; serological relationship between mumps and Newcastle disease viruses, **1017**; a review, **1369**; in Italy, **1370**; in Sweden, **1371** and **3558**; hatchery fumigation with formaldehyde against Newcastle disease, **1374**; haemolytic action of virus, **1378**; in the Netherlands, **1695**; in imported pheasants in the Netherlands, **1696** and **2914**; wild birds as source of the infection in Java, **1697**; haemolysis by Newcastle disease virus, **1698**; in South Africa, **2028**; in Hawaii, **2030**; experimental infection of monkeys, **2031**; in Canada, **2197**; in Yugoslavia, **2205**; in Ceylon, **2766-2767**; wild rats as possible carriers, **3238**; true nature of "fowl plague" in Turkey, **3239**; isolation from the eye of a veterinarian, **3241**; investigation of a commercial remedy, **3242**; in Turkey, **3589-3590**; histopathology, **3592**; in Eire, **3769**.
See also Fowl Plague.
Immunology. Immunization with live virus, **91**; field test, **92**; serological diagnosis, **388**; immunization of chicks from immunized hens, **729**; presence of virus in eggs from immunized hens, **730**; distribution of virus in inoculated birds, **731**; tissue culture virus used as vaccine, **733**; agglutination of mammalian erythrocytes by virus, **734**; serological relationship between mumps and Newcastle disease viruses, **1017**; response of ferret and rabbit to hamster adapted Newcastle disease virus, **1018**; commercial living vaccines, **1019**; imunization in Spain, **1375**; use of Mukteswar vaccine in the Philippines, **1376**; chick embryo vaccines, **1377**; antiviral activity of immune sera, **1699**; immunization, **1700-1701**; reinfection of chickens vaccinated by intranasal method with live virus, **1702**; modification of virus by cultural methods, **2032**; a nonspecific heat-labile factor in serum neutralization test, **2033**; mode of action of heat labile serum inactivating substance on the virus, **2034**; immunization in Spain, **2035**; effect of virus quantity and dilution procedure on the haemagglutination inhibition test in diagnosis, **2289**; vaccination breakdown with Mukteswar vaccine and its investigation by means of haemagglutination inhibition, **2592**; effect of sera from infected fowls on sensitized cells, **2593**; a small haemagglutinating component in preparations of virus, **2916**; vaccination by atomization or nebulization with B. virus, **2917**; report from practice, **3240**; large-scale trials in Belgium, **3243**; live (embryo virus) vaccine, **3244**; experiments with Indonesian strain passaged in ducklings and Geopelia striata, **3245**; haemagglutination-inhibition for differentiation from fowl plague, **3586**; inhibition of haemagglutination by normal human sera, **3595**; experiments, **3596**.
See also Duck Plague.
Virus. Haemolysis by the virus, **389**; study of virus in Tunisia, **728**; distribution in inoculated birds, **731**; multiplication of virus in brains of suckling mice, **732**; haemolytic action of virus, **1378**; agglutination of red cells altered by action of virus, **2593**; comparative studies of the viruses of fowl plague and Newcastle disease, **2913**; studies of the virus propagated in the bat Myotus lucifugus, **2915**; isolation from the eye of a veterinarian, **3241**; relationship of virus N and fowl plague, **3587**; comparative growth rates of a virulent and an avirulent strain, **3591**; environmental factors and viability, **3593**; transmission of Indoesian virus to embryonated eggs, **3594**.
NEW GUINEA. See Lice; Plasmodium Infection [Malaria].
NEW ZEALAND. See Behaviour of Animals; Copper; Dermanyssus; Fusiformis Nodosus Infection (Foot Rot), in swine; Helminth Parasites; Heredity, lethal factors; Paramphistomum; Reports, New Zealand; Salmonella Infection, general; Salmonella Infection, in sheep; Wild Pigs.
NIACIN. See Vitamins, vitamin B complex.
NICOTINIC ACID. See Vitamins, vitamin B complex.
NICTITATING MEMBRANE. See Eyes, diseases.
NIGERIA. See Nutrition, in cattle; Reports, Nigeria.
NIGHT BLINDNESS. See Eyes, diseases.
NIKETHAMIDE. In treatment of acute barbiturate poisoning, **2998**.
NIPPOSTRONGYLUS. Significance of haemoglobin, **121**; circulating antibodies in rats resistant to, **3281**.
NISULPHAZOLE. See Sulphonamides, nisulphazole.
NITRATE. Reduction of nitrate by rumen bacteria, **2142**.
See also Poisons and Poisoning.
NITRITE. Causing poisoning in pigs, **2995**.
NITROFURANS. Effect on Tr. foetus in vitro, **1000**.
NITROFURAZONE. In treatments of bovine mastitis, **1250**; in coccidiosis, **2262**; for control of avian coccidiosis, **3529**.
NITROGEN. Effect on number of ruminal microorganisms in sheep, **2396**.
See also Asphyxia.
NITROGEN MUSTARD. Anti-leucaemic action of urethane plus nitrogen mustard, **2317**; protective effect of cysteine on nitrogen-mustard induced leucopenia, **2367**; treatment trials of lymphadenosis in cattle, **2951**.
See also Mustard Gas; Shwartzman Phenomenon.
NITROGEN TRICHLORIDE. See Agene.
NITROPHENIDE. In experimental coccidiosis, **2262**.
NITROPHENOLS. Effect of pH upon bacteriostatic activity, **2692**.
p-NITROPHENYL PHOSPHATES. As substrate in the milk phosphatase test, **2407**; p-nitrophenyl diethyl thiophosphate [E.605] poisoning: a study of anticholinesterase compounds, **2997**.
See also Ticks, control
NOCARDIA. Cultivation of N. asteroides and N. intracellularis on chick embryos, **2861**.
See also Actinomyces Infection
NODULAR WORMS. See Oesophagostomum.
NOMENCLATURE. See Bacteria, General; Fungi; Theileria Annulata.
NOOGOORA BURR. See Poisons and Poisoning, plants.
NORTHERN RHODESIA. See Reports, Northern Rhodesia; Trypanosoma Infection, treatment and control.
NORWAY. See Actinomyces Muris-Ratti Infection; Mycobacterium Tuberculosis Infection, immunology [B.C.G.]; Repellants; Reports, Norway.
NOSE. See Respiratory System, nose.
NUCLEASE. Production by streptococci, **1655**.
NUCLEIC ACID. See Nucleoproteins.
NUCLEOPROTEINS. Of B. anthracis, **10**; and antibody production, **1394**; of avian tubercle bacilli, **1594**; cytoplasmic proteins, **1823**; relation of gram stain to cell wall and ribonucleic acid content of the cell, **1981**; in virus infections, **2912**; nucleic acid metabolism in virus infections, **3610**; book, biochemistry of nucleic acids, **3781**.
NUTRITION.
General. Relation of nutritional deficiency in man to antibody production, **137**; food and resistance to disease, **138**; effect of roughage and grazing on fat content of milk, **139**; effect of cholesterol feeding in hamsters, **143**; acid-hydrolized casein diet for rats, producing tryptophan deficiency, **146**; nutritional deficiencies in mink-haemorrhagic gastroenteritis, yellow fat and anaemia, **156**; effect of low fat intakes and crude fibre on fat absorption, **211**; feeding and breeding of g. pigs, **257**; book, animal nutrition, **282**; effect of dietary fat on mammary carcinoma formation in mice, **458**; dietary gastro-enteritis in chinchilla, **493**; maternal nutrition and hydrocephalus in newborn rats, **794**; "antialiments", factors preventing utilization of dietary essentials, **795**; allergic reaction from ingestion or injection of sugar, **796**; role of potassium in growth and bone formation, **799**; nutritive value of woody plants used as food for moose, **1067**; dietary hepatic necrosis, **1085** and **1086**; achromotrichia due to copper deficiency, **1434**; diet protein in relation to disturbed host-parasite

NUTRITION—General—[cont'd.]
balance, **1714**; effect of war-time nutrition on arteriosclerosis, cardiosclerosis, TB. and diabetes, **1754**; inactivation of oestrone by rats in relation to dietary effects on the liver, **1757**; availability of the magnesium of grass to the ruminant, **1763**; importance of diet in studies of chronic toxicity, **1787**; lead as a nutritional hazard, **1790-1792**; value of meatmeal and livermeal as sources of protein, **2078**; diet for rats to facilitate dissection of spinal, peripheral and autonomic nerves, **2156**; value of lucerne to supplement rice diet in South India, **2318**; studies in amino-acid utilization, **2325**; breeding of g. pigs without green food, **2438**; nutrition of the mouse, studies on pyridoxin and thiouracil, **2969**; variations in the blood, body fluids, organs and tissues of cattle kept on a water-free diet, **3032**; calcium phosphate deposits in g. pigs and the phosphorus content of the diet, **3293**; effect of starvation and feeding after starvation on metabolic activity in the rumen, **3307**; effect of diet on toxicity of toxic factor from agenized flour, **3322**; an automatic feed hopper, **3402**; nutritional aspects of resistance, **3678**; nutritional factors in reproductive failure, **3748**.
See also Acacia; Books, nutrition; Bracken; Calcium; Clover, Subterranean; Cobalt; Cod-Liver Oil; Digestive System; Fat; Glutamic Acid; Grass Tetany; Manganese; Metabolism; Parathyroid Glands; Phosphorus; Rickets; Rye Grass; Soya Beans; Strontium; Thyroid Gland; Vitamins; "Yellow Fat" Disease.

Cattle. Effect of rumen inoculations on the digestibility of roughage in young calves, **141**; influence of casein on roughage digestion in cattle and bacteriological studies of the rumen, **145**; nutritional causes of deterioration of cattle in Malabar and South Havana, **469**; mineral nutrition of Nigerian cattle, **475**; copper deficiency in calves, **476**; rat feeding tests with milk from cows fed toxic cottonseed meal, **513**; comfort and increased feed consumption in cows in summer, **596**; are cattle vegetarians? **790**; in Cyprus, **900**; control of sterility resulting from nutritional deficiencies, **1199**; hypocupraemia in cattle in East Anglia, **1433**; sugar beet leaves causing diarrhoea in cattle, **1449**; fused tricalcium phosphate as a low-fluorine phosphorus supplement for dairy cattle, **1758**; deposition and excretion of phosphorus in steers on high molybdenum and copper diets, **1759**; effect of an A.P.F. concentrate containing aureomycin on growth and well-being of calves, **1766**; influence of abnormal feeding on calcium-, magnesium- and phosphorus metabolism in cattle, **2079**; relation of feed to an outbreak of hyperkeratosis in calves, **2089**; influence of temperature on feed consumption, **2387**; relation between urinary calculi and sorghum feeding in steers, **2641**; cobalt as a remedy for "mossjuka", **2642**; test for the presence of alcohol in milk following feeding with silaged pomace, **3059**; nutrition of the new-born calf, changes in the tryptophan content of the blood plasma following birth and the ingestion of colostrum, **3291**; nutrition of the dairy calf, response to a photolyzed milk diet, **3292**.
See also Diabetes; Hyperkeratosis, Bovine; Ketosis; Milk Fever; Vitamins, vitamin E.

Dogs. Avitaminosis in dogs in the Arctic, **1769**; research developments in dog nutrition, **2650**.
See also Diabetes.

Goats. Food of goats in a semi-arid area, **1069**.

Horses. Nutritional deficiency disease in horses in the Cape Province, **157**; Compressed cakes as complete diet for horses, **1557**.

Poultry. Poultry nutrition, **144**; effect of purified diet on host-parasite relationship of chicken and Ascaridia galli, **448**; of ducklings, **473**; nutritional requirements of fowls, **792**; diet and mortality among inbred lines of chickens, **793**; abnormal feathering in ducks after feeding aminoacids, **798**; acute field encephalomalacia in chicks, **2349**; effect of decomposed fish meal on non-pullorum reactions, **2843**.
See also Perosis; Vitamins, vitamin B_2 [riboflavin]; Vitamins, vitamin D, vitamin E.

Sheep. Anoestrus in grazing cattle and sheep caused by malnutrition, **147**; sheep husbandry and nutrition in N.S.W., **237**; effect of nutrition on in-lamb ewes, **470**; carbohydrate metabolism in sheep, **471**; diet and dental development in sheep, **791**; effect of diet on sheep breeds during short exposures to hot environment, **1068**; function of cobalt in the nutrition of sheep, **1072**; cobalt and synthesis of vitamin B_{12} in rumen, **1073**; studies on the alimentary tract of sheep in South Africa, **1431**; rickets in sheep in East Anglia, **1438**; vitamin content of cured forage and utilization by lambs, **1443**; cobalt and copper deficiency in sheep in South Australia, **1760-1761**; coast disease in sheep, **1762**; effect of A.P.F. on young lambs, **1767**; oestrogenic action of subterranean clover extracts, **2649**; effect of supplementing poor quality grass hay with molasses and nitrogenous salts, in sheep, **3356**; handfeeding of a maintenance ration during drought, **3401**.
See also Aircraft; Licks.

Swine. Synthetic diets for growth and reproduction in pigs, **142**; toxopherol level and metabolism in swine, **801**; nutritional disease in swine by feeding great amounts of molasses, **1773**; response of pigs to feeding streptomycin, **2319**; effect of antibiotics on growth, **2320**; observation on response to aureomycin and A.P.F. in pigs, **2323**; rachitogenic effect of dried yeast in pig diets, **2643**; design and operation of metabolism units for nutritional studies with swine, **3090**; experimental production of nutritional macrocytic anaemia in swine, studies on pteroylglutamic acid deficiency, **3301**.
See also Copper; Trace Elements; Vitamins, vitamin B complex; Youngstock Diseases, piglets.

NYASALAND PROTECTORATE. See Reports, Nyasaland.

NYSTAGMUS. See Eyes, diseases.

O

OATS. See Rickets.

OBSTETRICS. See Parturition.

OCCUPATIONAL DISEASES. Undulant fever in man and cattle, **35**; brucellosis, **318**; skin affections due to streptomycin, **1124**; hazards in handling pesticides, **1473**; allergic conditions due to castor oil in industry, **1477**; brucellosis in veterinarians, **2518**; tularaemia, **3174**; Newcastle Disease virus isolated from eye of veterinarian, **3241**; TB. in sputum collectors, **3459**.
See also Leptospira Infection, in man from animals; Man, Diseases of Animals Transmissible To and From.

OEDEMA.
General. Studies on oedema, **167**; pathogenesis of oedema, **816**; dropsical meat, **866**; and capillary anoxia, **3690**.
See also Oedema Disease of Swine.
Pulmonary. Post-mortem pulmonary oedema in rabbits, **846**; oedema of the lungs, **1109**; experimental pulmonary oedema, **1110**; chemical analysis of g. pig lung for factors involved in pulmonary oedema, **2103**; histaminase and histamine in the prevention of experimental pulmonary oedema in g. pigs, **2124**; production of acute oedema by ammonium salts, **2665**; pathogenesis of ammonium pulmonary oedema, **2666**.

OEDEMA DISEASE OF SWINE. A study, **1463**; treatment with penicillin sodium salt, **2095**; in Holland, **2782**; in Belgium, **3316**; an atypical case of porcine encephalomyelitis in Italy (gut oedema?), **3574**; some observations, **3685**; in Eire, **3769**.

OENANTHE CROCATA. See Poisons and Poisoning, plants.

OESOPHAGOSTOMUM. Oe. radiatum and Bunostomum phlebotomum, in cattle, **1414**; parasitic gastro-enteritis in sheep, **2062**.

OESOPHAGUS. See Digestive System, oesophagus.

OESTRADIOL. See Sex Hormones, oestrogens.

OESTRIDAE.
Gastrophilus. Differentiation table of the family, **422**; in horses in Venezuela, **423**.
Hypoderma. Control in Anatolia, **1035**; eradication in Finland, **2052**; in Denmark, **2459**; a benzene hexachloride preparation for control, **2609**; in Cyprus, **2781** and **3766**.

OESTROGENS. See Sex Hormones.

OESTRONE. See Sex Hormones, oestrogens.

ONCHOCERCA. In cattle, **1055**; a clinical note on fistulous withers, **2634**; O. volvulus infection in Venezuela, **2945**; in camels, **3625**.

ONCOMELANIA. See Snails.

ONOSMA ECHIOIDES. See Poisons and Poisoning, plant poisoning.

OPHTHALMIA, PERIODIC. Periodic ophthalmia in horses, **1090**; agglutination and lysis of Leptospira by sera from horses with recurrent iridocyclitis, **2088**; in horses, **3680**.

OPSONIC INDEX. See Brucella Infection, Immunology.

ORF. See Dermatitis, Ovine Contagious Pustular.

ORGANISATIONS, INTERNATIONAL. F.A.O. meeting on livestock breeding in tropics, **3086**; international organisations for control of epizootics, **3310**; joint F.A.O/W.H.O. expert panel on brucellosis, **3487**.
See also Reports, international.

ORNITHODOROS. See Ticks, Argasidae.

ORNITHOGLOSSUM VIRIDE. See Poisons and Poisoning, plant poisoning.

ORNITHOSIS. See Psittacosis.

OSCILLOGRAPHY. Tonoscillography in diagnosis of arterial diseases, **495**.

OSSIFICATION. See Bones.

OSTEOMALACIA. See Bones, diseases.

OSTEOPETROSIS. See Bones, diseases.

OSTEOPOROSIS. See Bones, diseases.

OSTERTAGIA. Differentiation of eggs of H. contortus and Ostertagia species, **1418**; parasitic gastro-enteritis in sheep, **2062**; blood picture of sheep exposed to stomach worms O. circumcincta and O. trifurcata, **2943**; in Australia, **3412**.

OTITIS. See Ear.

OTOBIUS. See Ticks, Argasidae.

OVA. See Eggs.
OVARY. See Genital System, ovary.
OVINATION. See Pox Diseases, sheep pox.
OVULATION. See Genital System, ovulation.
OXIDATION-REDUCTION POTENTIAL. Activation of eggs by oxidation-reduction indicators, 565; oxidation-reduction in bacterial cultures and reducing power of Bact. lactis aerogenes, 3519.
OXYGEN. Ascaris haemoglobin as indicator of oxygen, 447; use of oxygen in hatching of eggs at high altitudes, 886; oxygen uptake of embryonated eggs infected with Western equine encephalitis virus, 2898.
See also Circulatory System, diseases; Temperature, environmental.
OXYSPIRURA. O. mansoni, a tropical eyeworm of poultry, 1054.

P

PAIN. Role of the cerebral cortex in the apperception of pain, 1822.
PALESTINE. See Israel.
PALUDRINE. Action on Plasmodium berghei, 351.
PAMAQUIN. See Theileria Infection, treatment and control.
PANAMA. See Toxoplasma Infection; Trichinella.
PANARTERITIS. In a dog, 1107.
PANCREAS. Alloxan-produced renal cortical necrosis in sheep with and without ligation of pancreatic duct, 181; Sch. bovis infection of the pancreas in cattle, 2622; anaphylactic nature of acute necrosis of the pancreas, 2664; study of lymphoid areas in pancreas of doves and pigeons, 3664.
PANTING. In cattle, a sequel to F. & M. disease, 1092; panting in cattle, 1093-1098; panting in cattle and non-sweating in horses, 1099.
PANTOTHENIC ACID. See Vitamins, vitamin B complex.
PAPILLOMA. See Neoplasms.
PARA-AMINO BENZOIC ACID. See p-Aminobenzoic Acid.
PARA-AMINO SALICYLIC ACID. See p-Aminosalicylic Acid [P.A.S.].
PARABASAL BODY. Persistence of parabasal body in a Trypanosoma brucei strain, 338.
PARABIOSIS. Heteroplastic parabiotic intoxication, antibody formation and antihistamine treatment, 1392.
PARADIMETHYLAMINOAZOBENZENE. See Neoplasms, causation.
PARALYSIS. See Nervous System, diseases.
PARALYTIC RABIES. See Rabies.
PARAMPHISTOMUM. Life history of paramphistomes of cattle in N. Zealand, 115; in cattle in Scotland, 620; in the Republic of Ireland, 623; species of Paramphistomum in Britain and Ireland, 1735.
PARAPLEGIA. See Clostridium Botulinum Intoxication [Botulinum]; Diseases, General.
PARASITICIDES.
General. Residual toxicity of chemicals for black widow spider control, 428; SK-9 against ticks and lice, 432; molluscacides against Australorbis glabratus, 436; sheep dipping trials against sheep ked and sheep louse, 533; dibutylphthalate as a tick repellant on sheep, 620; temperature and insecticidal actions of compounds against sheep ticks, 757; S.N.P. against A-persicus, 760; occupational hazards in handling pesticides, 1473; SK-9, a parasiticide for domestic animals and poultry, 2055; parasiticides and control of animal pests, 2129.
See also Anthelmintics; Benzene Hexachloride; D.D.T.; Insecticides; Parathion; Phenothiazine; Poisons and Poisoning.
PARASITIC INFESTATION, GENERAL.
General. Check list of parasites in animals, in Ohio, 104; in the Belgian Congo, 120; book, 288; geographical distribution of parasitic fauna in Uruguay, 703; in Cyprus, 900 and 1231; in Trinidad and Tobago, 1232-1234; Fiji, 1235-1236; Nigeria, 1238; parasites in relation to disease in Czechoslovakia, 1404; diet protein in relation to disturbed host-parasite balance, 1714; animal parasites of man, 1723; sterilization of land against poultry parasites, 1724; St. Kitts-Nevis, 2198; control in Brazil, 2299; parasites and parasitic diseases in horses, 2607; in relation to animal industry in the Union of S. Africa, 2608; of camels, in the Sudan, 3625.
See also Books, parasitology.
Arthropods. Tests on rabbits of a preparation against lice, given orally, 1033; prevention of equine encephalomyelitis by arthropod control, 2585.
See also Myiasis.
Helminths. In Parana, 1745; parasitic gastro-enteritis in sheep, 2062; haematology of dogs with intestinal parasites, 2140; associated with ketosis in pregnant ewes, 2348; epidemiology and the efficient parasite (with special reference of nematode parasites of domestic animals), 2938.
See also Helminth Parasites; Spasmophilia.
PARASORBIC ACID. Amino acids and trypanocidal activity of parasorbic acid, 525.
PARATHION. Toxicity, 2109; effect on dairy cows, 2157; experimental parathion feeding to dairy cows, 2366.
PARATHYROID GLANDS. Parathyroid glands and metabolic bone disease, 496; X-ray diffraction studies on bone tissue during hyperparathyroidism, 2994; studies on parathyroidal function in relation to hormonal influences and dietetic conditions, 3053.
PARATYPHOID. See Salmonella Infection, in man.
PARESIS, PARTURIENT. See Milk Fever.
PARODONTAL DISEASE. See Teeth.
PAROTOTIS. See Mumps.
PARTURITION. Separate calving pens in the control of brucellosis in cattle, 42; effect of dicthylstilboestrol dipropionate on postpartum changes in cows, 245; expulsion of foetal membranes in cows, 246; use of oestrogens in gynaecology, 589; generalized ankylosis in cattle in New Zealand and correction of dystocia, 3749-3750.
See also Behaviour of Animals; Books, obstetrics Caesarian Section; Pregnancy; Reproduction.
P.A.S. See p-Aminosalicylic Acid [P.A.S.].
PASPALUM DILATATUM. See Poisons and Poisoning, plant poisoning.
PASTEURELLA AVICIDA. Effect of temperature on viability and virulence of P. avicida, 1619.
See also Pasteurella Infection, in fowls, in turkeys.
PASTEURELLA HAEMOLYTICA. Animal infections in Belgium caused by Pasteurella haemolytica, penicillin sensitivity of the agent, 28.
PASTEURELLA INFECTION.
General. Pasteurella haemolytica infection in animals in Belgium, penicillin sensitivity of the agent, 28; plague in cottontail rabbits in New Mexico, U.S.A., 1932; in rabbits and hares, 3476.
See also Pasteurella Pseudotuberculosis.
Avian. Fowl cholera in turkeys, 29; sulphaquinoxaline in treatment of fowl cholera, 901; sulphonamides in treatment of fowl cholera, 1568; in Yugoslavia, 2205; outbreak of fowl cholera in ducks, 2501; aluminium sulphate precipitated vaccine against fowl cholera, 2502; sulphonamides against fowl cholera in ducks, 2503; fowl cholera in New Zealand, 2763; sulphonamide treatment, 2840; fowl cholera in Nyasaland, 3768.
In Cattle. Acute haemorrhagic septicaemia in calves in Ireland, 27; in Nigeria, 1237; treatment of pneumonia in cattle, 2500; in India, 2765.
In Sheep. Treatment with penicillin, 3159.
In Swine. In Indonesia, 1618; in the Netherlands, 2458.
PASTEURELLA MULTOCIDA. See Pasteurella Septica.
PASTEURELLA PESTIS. Differentiation from Past. pseudotuberculosis, 3477.
PASTEURELLA PSEUDOTUBERCULOSIS. In man in Switzerland, 1933; differentiation from P. pestis, 3477.
PASTEURELLA SEPTICA. P. septica chick embryo vaccine, 942; studies on P. septica, 1620; effect of antibiotics, 1934; effect of aureomycin and terramycin on infection and effect of neomycin in vitro, 3160.
PASTEURELLA TULARENSIS. See Brucella Tularensis Infection [Tularaemia].
PASTEURIZATION. Of liquid egg products, 1524; Dutch method for egg pasteurization, 1525.
See also Milk and Milk Products, bacterial content.
PASTURES AND GRAZING. Aphosphorosis and grassland conditions in Ireland, 148; mineral deficiency in pastures, 149; sheep management on needlegrass pastures, 579; survival on pasture of free-living stages of sheep nematodes, 1741; effect of vitamin A supplements on reproduction in grazing ewes, 1768; irrigated pastures in California, 2745; studies on nutrition of pasture plants in Australia, 2964.
See Behaviour of Animals; Fertilizers; Nutrition, general.
PEDICULUS. Tests on rabbits with an orally administered preparation against P. humanus corporis, 1033.
PELLAGRA. See Vitamins, vitamin B complex.
PEMPHIGUS. Adrenal insufficiency after suramin treatment of, 527.
PENICILLIN. Treatment of bovine pyelonephritis, 200; fertility of bovine semen in extenders containing sulphanilamide, penicillin, streptomycin and polymyxin, 241; in the prevention of summer mastitis in cattle, 313; for purification of cow pox vaccine, 364; purification of pigeon pox virus, 366; and blood coagulation, 550; action on Str. agalactiae in milk, 635; in psittacosis, 736; in conjunctivitis of dogs, 815; dosage in domestic animals, 831; milk levels in cows following intramammary administration, 832; penicillin and sulphanilamide in semen diluents, 875; penicillin preparations and sulphone singly or combined for staphylococcal mastitis, 910; for control of Str. agalactiae mastitis in cattle, 911; and growth of fungi, 982; aerosol and intratracheal penicillin, 1129; diffusion of penicillin, 1130; combined penicillin and ice therapy, 1131; principles of penicillin therapy, 1492; treatment of streptococcal mastitis, 1579; in bovine pyelonephritis, 1610-1611; effect on E. rhusiopathiae in vivo and in vitro, 1614; penicillin-screened auxotrophic mutations in S. typhi-murium and X-ray dosage, 1630; tolerance of the dog to intrathecal injections, 1814;

PENICILLIN—[cont'd.]
sensitivity of enterococci and streptococci of the viridans group, **1815**; sensitivity of staphylococci in relation to clinical manifestations of infection, **1906**; in the treatment of Str. aronson infection of white mice, **1910**; effect on the agent of feline pneumonitis, **2023**; treatment of oedema disease in swine, **2095**; in intrauterine treatment of vibrionic sterility in dairy cows, **2248**; in complications of distemper, **2287**; interfering action of terramycin and aureomycin, **2376**; sensitivity of Str. agalactiae, Str. uberis, Str. dysgalactiae, Staph. aureus, and Corynebact. pyogenes, **2479**; for mastitis caused by cocci, **2480**; and 4-4′ diamino-diphenyl sulphone in mastitis, **2481**; in calf pneumonia, **2500**; for purification of vaccine lymph, **2573**; persistence in the body, **2682**; serum level response of horses to aqueous solutions, **2683**; combined action of penicillin, streptomycin or chloromycetin on enterococci in vitro, **3015**; in ovine pasteurellosis, **3159**; for treatment of leptospirosis, **3185**; toxicity to g. pigs, **3328**; action upon growth-inhibited bacteria, **3486**; action on growth response of Gram-negative bacillus to amino acids and peptides, **3521**; effect on bull semen, **3735**; toxicity to bull spermatozoa, **3736**.
See also Bacteria, General; Candida; Insemination, Artificial; Pasteurella Haemolytica; Mastitis, Bovine, treatment; Penicillium; Rabies, general; Staphylococci; Wounds.

PENICILLIUM. Dried penicillium mycelium as a riboflavin source in chick rations, **1444**.

PENTAMIDINE. See Trypanosoma Infection, treatment.

PENTOBARBITAL. Influence of sex glands on detoxication by the liver, **2128**.

PEPTIDES. Action of penicillin on growth response of Gram-negative bacilli to amino acids and peptides, **3521**.

PEPTONES. Growth of bacteria in the presence of peptones, **991**; toxicity of peptone for Br. abortus, **1657**.
See also Immunology, anaphylaxis.

PERCHLORIDE OF MERCURY. See Disinfectants, Antiseptics and Sterilization.

PERIARTERITIS NODOSA. In a cow, **1108**; effect of A.C.T.H. and cortisone on lupus erythematosus and peri-arteritis nodosa, **1145**; in pigs, **2661**.

PERICARDITIS/GASTRITIS, TRAUMATIC. See Circulatory System, diseases; Digestive System, diseases.

PERITONEUM. Mechanics of respiration in the dog as reflected by changes in intraperitoneal pressure, **3721**.

PEROSIS. Enlarged hock disorder (perosis) in turkeys, **3309**.

PERRALDERIA. See Poisons and Poisoning.

PERSIA. See Pfeifferella Mallei Infection [Glanders].

PFEIFFERELLA MALLEI INFECTION [GLANDERS]. Keeping qualities of mallein and tuberculin B, **1718**; in Yugoslavia, **2205**; streptomycin treatment, **2236**; streptomycin treatment in man, **2237**; in Germany, **2460**; allergic properties of mallein prepared on synthetic medium, **2495**; standardization of mallein in Persia, **2835**; control in Indonesia, **3157**.

PFEIFFERELLA WHITMORI INFECTION. First case in Western Hemisphere, **938**; in sheep in Australia, **3412**; an antibiotic from Pf. whitmori, **3703**.

pH. See Hydrogen-Ion Concentration.

PHALANGERS. Transmission of TB. to T. vulpecula, **22**; transmission of Chagas' disease to the Australian marsupial Trichesurus vulpecula, **3194**.

PHARMACOLOGY. See Books, pharmacology; Therapeutics and Materia Medica.

PHASE MICROSCOPY. See Technique and Apparatus, microscopy.

PHEASANTS. Pullorum disease in pheasants, **316**; equine encephalomyelitis in pheasants in New Jersey, **373**; Syngomus trachea in pheasants in Czechoslovakia, **1050**; Newcastle disease in Holland, **1696**; Newcastle disease in imported pheasants in Holland, **2914**.

PHENAMIDINE. Toxicity of phenamidine [M. & B.] in dogs, **180**.
See also Theileria Infection, treatment and control.

PHENANTHRIDINIUM COMPOUNDS. See Trypanosoma Infection, treatment.

PHENOL. See Immunology, vaccines.

PHENOTHIAZINE. Small daily doses for sheep against trichostrongylosis, **119**; for yearling foals, **438**; against horse strongylosis, **439**; "reconox" a phenothiazine preparation for horse strongylosis, **440**; poisoning in goats, **504**; effect on colour of goat's milk, **865**; against H. contortus in lambs, **1743-1744**; results of continuous treatment in horses, **2309**; for trichostrongylosis and haemonchosis in camels, **2311**; treatment of demodectic mange, **2620**; for control of strongyles in horses, **2628**; anthelmintic property of derivatives against A. columbae in pigeons, **2690**; effect on B. phlebotomum, **2944**; and the blood picture in sheep, **3010**; with salt given as a lick to sheep, **3011**; comparative experiments on effect of phenothiazine and copper sulphate for nematodes of sheep and goats, **3279**; experiences in France, **3280**; for horses, **3639**; causing photosensitization in sheep, **3642**.
See also Radioactive Isotopes.

o-PHENYLENE DIAMINES. In vitro effect on mycobacteria, **17**.

PHENYLHYDRAZINE HYDROCHLORIDE. Effect on Pl. knowlesi infection in a monkey, **1992**.

PHILIPPINES. See Histoplasma Farciminosum Infection [Epizootic Lymphangitis]; Newcastle Disease; Physiology, General; Schistosoma Infection.

PHLEBOTOMUS. Visceral leishmaniasis and Phlebotomus control by means of D.D.T., **1727**.

PHOSPHATASE. Metabolism and alkaline phosphatase excretion and relation to liver function, **848**; p-nitrophenylphosphate as substrate in the milk phosphatase test, **2407**; bacterial phosphatases, **2538**; serum alkaline phosphatase in dogs following ligation of the hepatic veins, **3712**; role of alkaline phosphatase in osteogenesis, **3713**.

PHOSPHORUS. Aphosphorosis and grasslands in Eire, **148**; calcium, phosphorus and magnesium values in cattle, horse, sheep and pig serum in Ireland, **215**; content of blood in distemper, **381**; effect of hypophysectomy, adrenalectomy and A.C.T.H. on phosphorus metabolism of rats, **545**; calcium and phosphorus for bone formation, **1436**; fused tricalcium phosphate as a low-fluorine phosphorus supplements for cattle, **1758**; deposition and excretion of phosphorus in steers on high molybdenum and copper diets, **1759**; influence of abnormal feeding on metabolism, in cattle, **2079**; deficiency in Australia, **3413**; deficiency in Eire, **3769**.
See also Nutrition, general; Metabolism; Pastures and Grazing; Radioactive Isotopes.

PHOTOKYMOGRAPHY. Photokymographic study of the process of rumination, **1842**.

PHOTOMETRY. See Technique and Apparatus, general.

PHOTOMICROGRAPHY. See Technique and Apparatus, general.

PHOTOPERIODICITY. See Genital System, oestrous cycle.

PHOTOSENSITIZATION. In animals in South Africa, **1480**; the icterogenic factor in geeldikkop, **1480**; congenital photosensitivity, in sheep, **3385**; photosensitivity, a new sub-lethal factor in sheep, **3386**; in sheep, caused by phenothiazine, **3642**.

PHTHALYLSULPHATHIAZOLE. See Sulphonamides, sulphathiazole.

PHYSIOLOGY. Excretion of water, **537**; participation of reticulo-endothelial system in alarm reaction, **538**; influence of temperature on heat production and cardio-respiratory activity of cattle, **539**; environmental physiology, **540**; interstitial desoxyribonucleic acid following cell death, **543**; effect of exposure to loud tones on response to acoustic clicks, **544**; duodenal glands and erythrocyte formation in swine, **553**; glycaemia and reflex closure of oesophageal groove, **556**; effect of bacitracin on renal function, **563**; weight losses in slaughter stock during transit, **575**; thirst and its inhibition in the stomach, **1157**; physiological changes in intermediary metabolism in ruminants, **1160**; the naso-lachrymal duct in the goat, **1828**; depressor and pressor activity of extracts from the aortic wall of cattle, **1838**; measurement of total body water by deuterium oxide dilution, **2132**; normal haemoglobin content, temperature, respiration rate and pulse rate in Philippine mares, **2706**; variations in blood, body fluids, organs and tissues of cattle kept on a water-free diet, **3032**.
See also Adrenal Gland; Blood; Blood-Brain Barrier; Books, physiology; Circulatory System; Digestive System; Ear; Endocrine System; Enzymes; Eyes; Fatigue; Genital System; Hair; Hormones; Kidneys; Lactation; Lymphatic System; Milk and Milk Products, colostrum; Nervous System; Nutrition; Parathyroid Glands; Pituitary Gland; Preen Gland; Pregnancy; Respiratory System; Sebaceous Glands; Skin; Spleen; Sweating; Temperature, body; Thymus; Thyroid Gland; Urinary System.

"PICKOUT." See Cannibalism.

PIGEONS. See Ascaridia Columbae; Eimeria Infection [Coccidiosis], Avian; Fowls, protozoan diseases; Haemoproteus Infection; Pancreas; Phenothiazine; Pox Diseases, pigeon pox; Salmonella Infection, general; Trichomonas Infection, in pigeons.

PIGLETS. See Leptospira Infection, in swine; Swine; Vitamins, vitamin B.; Youngstock, Diseases.

PIGMENTS. Peroxidation and yellow-brown pigment in fat of vitamin E deficient rats, **1161**; inheritance of dominant pigmentation in Portuguese fine wool sheep, **2178**; effect of ovarian hormones upon uterine pigmentation in vitamin E deficient rats, **2334**; histochemistry of uterine pigment in vitamin E deficient rats, **2335**; role of copper in mammalian pigmentation, **2693**.
See also Blood; Liver, bile and bile pigments; Skin, general.

PIGS. See Swine.

PINEAL BODY. Staining of pineal parenchyma, **612**.

"PINKEYE" IN CATTLE. See Keratitis Infections, in cattle.

PIPERAZINE. See Anthelmintics, general.

PIPERONYL BUTOXIDE. Activating pyrethrin esters by inhibition of lipase, **2131.**
See also Ticks, control.
PIPERONYL CYCLONENE. See Ticks, control.
PIROPLASMOSIS. See Babesia Infection [Piroplasmosis].
PITUITARY GLAND.
General. Effect of oestrogen on pituitary cytology and function, **226**; effect of hypophysectomy, adrenalectomy and A.C.T.H. on phosphorus metabolism of rats, **545**; pregnenolone and spermatogenesis of hypophysectomized rats, **878**; effect of hypophysis, thyroid, sex steroids and adrenal cortex on granulation tissue, **1177**; role of hypophyseal-hypothalamic system in haematopoiesis, **1469**; ascorbic acid content in relation to stress and adrenalectomy, **2154.**
See also Books, endocrinology; Pituitary Gland, anterior hormones.
Anterior Hormones. Prolactin and milk production, **205**; neoplasms in rats treated with pituitary growth hormone, **456**; release of A.C.T.H. by direct application of epinephrine to pituitary grafts, **532**; effect of hypophysectomy, adrenalectomy and A.C.T.H. on phosphorus metabolism, **545**; a new pituitary gonadotrophic preparation, **1150-1152**; mammary growth in castrated mice grafted with anterior lobes of hypophyses and ovaries, **1425**; action of human chorionic gonadotrophin on adrenals and testicles of hypophysectomized immature rats, **1538**; role of adrenals in production of renal and cardiovascular damage by anterior pituitary preparations, **2101**; action on the fibrinolysinantifibrinolysin system in serum, **2393**; effect of growth hormone on water metabolism in hypophysectomized dogs, **3040**; of the whale with special reference to its A.C.T.H. content, **3051.**
See also Adrenocorticotrophic Hormone [A.C.T.H.]; esoxycorticosterone.
PLACENTA. See Genital System, placenta.
PLAGUE. See Pasteurella Infection, general.
PLANORBIS. See Snails.
PLASMOCID. See Poisons and Poisoning, general.
PLASMODIUM BERGHEI. Action of paludrine on Pl. berghei and inhibition by p-aminobenzoic acid, **351**; response of Pl. berghei to antimalarial drugs, **702.**
PLASMODIUM CATHEMERIUM. Containing a filtrable agent lethal for ducks, **2554.**
PLASMODIUM ELONGATUM. Containing a filtrable agent lethal for ducks, **2554.**
PLASMODIUM GALLINACEUM. Alterations in the cycle after tissue culture passage, **352**; sulphonamides as factors increasing susceptibility of A. aegypti, **2049**; causing exudative pericarditis in fowls, **2264**; twofold quinine resistance, **3200**; range of extracellular pH tolerated by macrophages grown in tissue culture, **3531.**
See also Plasmodium Infection, avian.
PLASMODIUM INFECTION [MALARIA].
General. Stages in the development of collective immunity to malaria in New Guinea, **2555.**
Avian. Pl. gallinaceum causing pericarditis in fowls, **2264**; filtrable agents in plasmodia lethal for ducks, **2554**; host-parasite relationship in untreated fowls, infected with Pl. gallinaceum, **3530.**
See also Plasmodium Lophurae.
PLASMODIUM KNOWLESI. Effect of phenylhydrazine hydrochloride on infection in a monkey, **1992.**
PLASMODIUM LOPHURAE. Ability of Pl. lophurae to infect erythrocytes of distantly related animals, **1668**; extra cellular cultivation of Pl. lophurae, **1669**; phagocytic activity against Pl. lophurae of macrophages from ducks varying natural resistance, **2265**; containing a filtrable agent lethal for ducks, **2554.**
PLASMODIUM RELICTUM. Containing a filtrable agent lethal for ducks, **2554.**
PLATELETS. See Blood, platelets.
PLEURODYNIA. Lesions in suckling mice caused by viruses from cases of "non-paralytic poliomyelitis" and of pleurodynia, **1688.**
PLEURO-PNEUMONIA, BOVINE CONTAGIOUS. Control in Victoria, **56**; control in Australia, **57**; in Australia, **272-274** and **3412**; preservation of the organism, **987**; in Nigeria, **1237-1238**; local reaction in cattle to subcutaneous inoculation of lung fluid from infected cattle, **1979**; in Uganda, **2199**; in Sierra Leone, **2201**; in N. Rhodesia, **2774**; in Gambia Colony, **2775**; in East Africa, **3418**; in Zanzibar, **3420**; in Sierra Leone, **3422**; in Gold Coast Colony, **3767.**
PLEURO-PNEUMONIA, CAPRINE CONTAGIOUS. In Nigeria, **1237**; vaccine and chemotherapy, **3188.**
PLEURO-PNEUMONIA, EQUINE. In Norway, **3770-3771.**
PLEURO-PNEUMONIA GROUP. Properties and identification of strains, **330**; electron micrograph studies of organisms of the group of human origin, **988**; susceptibility to some selective inhibitants, **1653**; methods for the study of, **1874**; relation to conjunctival changes in mice, **1980.**
PNEUMOCOCCUS. Pneumococcus type II infection in laboratory rats, **1581**; demonstration of agglutinins after intraperitoneal injection of pneumococcus Type I in g. pigs, **1914.**
See also Streptococcus Infection, in cattle.
PNEUMOENCEPHALITIS, AVIAN. See Newcastle Disease.
PNEUMONIA.
General. Sulphonamide treatment of enteritis-pneumonia syndrome in swine, **1136**; association of Actinobacillus actinoides with pneumonia in cattle and Actinomyces muris-ratti, **1296**; sulphamethazine in the treatment of pneumonia in swine, **1959**; treatment of pneumonia in cattle, **2500**; ustilago maydis spores causing pneumonia in cattle, **2530**; infectious pneumonia of pigs, **2839**; haemotological studies in dogs with pneumonia and distemper, **2988.**
See also Pneumonitis, Feline; Streptococcus Infection, in cattle.
Virus [General]. In g. pigs, **2909**; behaviour of g. pig pneumonia virus in biting arthropods, **2910.**
Virus [Mice]. Modification in mice, **1016**; dependence of lesions on multiplication of virus in mice, **3582**; characteristics of multiplication, **3583**; therapy, **3584.**
PNEUMONITIS, FELINE. Effect of penicillin on the agent, **2023**; effect of aureomycin on the agent, **2024**; treatment with chloramphenicol aureomycin and terramycin of mouse pneumonia caused by virus of feline pneumonitis, **2026.**
PNEUMONYSSUS. P. caninum in a dog, **3267.**
PODOPHYLLIN. See Neoplasms, treatment.
PODOPHYLLOTOXIN. Effect on lymphatic tissue of normal and adrenalectomized rats, **2155.**
See also Neoplasms, treatment.
POISONS AND POISONING.
General. Toxicology in canine practice, **172**; various poisonous plants in Australia, **272-274**; toxicity of insecticides and weed killers, **498**; potency and toxicity of synthetic oestrogens, **529** and **530**; toxicity index of insecticides, **534**; toxicity of flesh from stilboestrol-castrated capons, **590**; toxicity of chlorinated insecticides to livestock, **824**; toxicity of oestrogen concentrates of sheep urine for mice, **825**; poisoning in fowls, **1115**; report on enzootic (toxaemic) jaundice of sheep, **1122**; occupational skin affections due to streptomycin, **1124**; occupational hazards in handling pesticides, **1473**; photosensitization in animals in South Africa, the icterogenic factor in geeldikkop, **1480**; cornstalk poisoning, **1568**; foreign bodies and seed disinfectants causing colic in horses, **1777**; importance of diet in studies of chronic toxicity, **1787**; toxic factors in rumen ingesta, **2111**; distribution of brain lesions caused by azide, malononitrile, plasmocid and dinitrophenol poisoning in rats, **2371**; book, poisons guide, **3777.**
See also Agene; 4-Amino-Pteroylglutamic Acid; Anaesthesia; Antrycide; D.D.T., toxicity; Doping; Enzymes; Food Hygiene; Gases, Poisonous; Helminth Parasites; Lewisite; Mustard Gas; Parabiosis; Penicillin; Phenamidine; Rubber; Sex Hormones, oestrogens; Snake Venoms; Streptomycin; Vermin Control; Vitamins, vitamin D; Warfare; Water.
Inorganic Poisoning. Toxicity of radioactive isotopes, **191**; lesions in brain and organs caused by cyanide and fluoroacetate poisoning, nitrogen asphyxia and insulin hypoglycaemia in rats, **214**; portal cirrhosis and ascites following administration of Fowler's solution (potassium arsenite), **499**; fluorine poisoning, **1470**; nitrate poisoning in cattle, **1471**; poisoning in sheep by sodium chlorate weed killer, **1794**; ameliorating effect of aluminium salts in fluorosis, **2105**; thallium poisoning in domestic animals, **2106**; toxicity of parathion to warm blooded animals, **2109**; monofluoroacetic acid and related compounds, **2671**; nitrates and fluorine in well water, **3412.**
See also Agene; Ammonia; Arsenic; Barbiturates; Copper; Lead; Manganese; Nitrite; p-Nitrophenyl Phosphates; Selenium; Strychnine.
Organic Poisoning. Toxic effect of alloxan in sheep, **181**; toxicity of toxaphene, an agent for control of grasshoppers, **182-185**; metabolism and toxicity of cyanides in sheep, **512**; fatal poisoning with udolac (diaminodiphenyl sulphone), **822**; Alpha-napthyl thiourea (Antu) poisoning in dogs, **1118**; effect of adenine on rats, **1119**; metabolism and toxicity of cyanides, **1797**; a law case on "Kleggolje" poisoning, a tabanid repellent, **2107**; Düren or Brabant disease (trichloroethylene poisoning) in cows, **2108.**
See also Benzene Hexachloride; Carbon Tetrachloride; Curane; Cyanide; D.D.T., toxicity; Dichlorodiaminobenzene; 2,4-Dichlorophenoxyacetic Acid; Parathion; Phenothiazine; Snake Venoms.
Plant Poisoning. Suspected solanine poisoning in a mare, **186**; cacao waste poisoning in ducks, **188**; Indigofera enneaphylla poisoning (Birdsville disease) in horses in Australia, **272-274**; various poisonous plants in Australia, **272-274**; laburnum poisoning in cattle, **509**; Noogoora burr (Xanthium pungens) poisoning in cattle, **510**; toxicity of Perralderia coronopifolia for camels and small ruminants, **511**; rat feeding test with milk from cows fed toxic cottonseed meal, **513**; somnolence

POISON AND POISONING—Plant Poisoning—[cont'd.]
and icterus (? Senecio poisoning) in horses, **1091**; poisoning of livestock by Cucurbitaceae, **1120**; water dropwort (Oenanthe crocata) poisoning in cattle, **1121**; sugar beet leaves causing diarrhoea in cattle, **1449**; allergic conditions due to castor oil in industry, **1477**; castor bean poisoning, **1478**; poisoning of cattle by algae, in Ontario, **1479**; acute poisoning of farm animals by moulds, **1800**; studies on Australian ergot, Claviceps pusilla, **1801**; poisoning of ducklings by fungi, **1802**; toxicity of flesh of quails after ingestion of seeds of hemlock (Conium maculatum) seeds or Oenanthe crocata, **1803**; toxic effect on rats of "ratanjot", a dye prepared from Onosma echioides and used for colouring edible fats, **1804**; Equisetum poisoning of horses in Yugoslavia, **2110**; Heliotrope poisoning in sheep, **2112-2113**; rhubarb poisoning in animals, **2114**; Indigofera enneaphylla poisoning of horses, **2372**; investigation into the toxicity of known and unknown poisonous plants in the Union of South Africa, **2373**; poisoning in horses from mouldy fodder, **2674**; plant poisoning in pigs, **2677**; Ranunculus pubescens, Nerium oleander, Senecio latifolius, Cucumis africanus, Gloriosa superba, Kalanchoe thyrsiflora, Euphorbia, ingense, Cheronia transvaalensis, Moraea zambesiaca, Datura tatula, Solanum incanium, Mundulea sericea, Ornithoglossum viride, Ricinus communis, Lascosiphon kraussianus, Melia azedarach, Pteris aquilina, Sariostemma viminale, Equisetum ramosissimum and Diplodia zeae, poisonous plants of the Marandellas district, S. Rhodesia, **2999**; rhododendron poisoning in goats, **3001**; morel (H. esculenta) poisoning in dogs, **3002**; effect of creeping indigo (Indigofera endecaphylla) on laying chickens, **3003**; fescue poisoning in New Zealand, **3110**; mimosine, from Leucaena glauca, causing loss of hair in horses, **3323**; experimental lathyrism, **3324**; foxglove (D. purpurea) poisoning in turkeys, **3325**; Nerium obander poisoning in Australia, **3412**.
See also Bracken; Cornstalk Disease; "Mraclin" Disease.

POLAND. See Brucella Infection, in cattle; Leptospira Infection, in dogs; Services Veterinary, Poland.

POLIOMYELITIS. Comparison with encephalitis in dogs and Teschen disease, **84**; its relation to distemper, **85**; provisional definition of virus, **95**; search for extrahuman sources of the virus, **96**; in sewage, **97**; non-paralytic poliomyelitis or aseptic meningitis, **393**; does virus grow on sewage? **394**; immunological studies in chimpanzees, **737**; a virus isolated from a case of "non-paralytic poliomyelitis" and its possible relation to the Coxsackie group, **1687**; study on entry and egress of the infection in monkeys, **2036**; incidence in inoculated children in England and Wales, **2290**; relationship with distemper, **2590**; pseudopoliomyelitic diseases of animals, **3247**; antibody response of patients to virus recovered from their own alimentary tract, **3248**; effect of prolonged storage on the neutralizing antibody of antiserum, **3249**; in Morocco, **3424**.

POLONIUM. See Radioactive Isotopes.

POLYARTHRITIS. See Arthritis.

POLYCYTHAEMIA. See Blood, diseases.

POLYMYXIN. Control of bacteria in bovine semen extenders with sulphanilamide, polymyxin and aureomycin, **240**; study on polymyxin chloromycetin and aureomycin, **1134**; treatment of burns, **3478**.

POLYPLOIDY. Colchicine-induced polyploidy in rabbits, **244**.

POLYSACCHARIDES. Changes in serum polysaccharide content in TB., **303**; agglutination of polysaccharide-treated erythrocytes by tularaemia antisera, **969**.

POMACE. See Nutrition.

PORPHYRINS. In urine, first symptom of lead poisoning, **1114**; studies on free erythrocyte protoporphyrin, plasma copper and plasma iron in normal and pyridoxine deficient swine, **2968**.
See also Blood, general.

PORTHETRIA. Control of gypsy moth, P. dispar, with D.D.T., **2306**.

PORTUGAL. See Echinococcus; Rabies, treatment and control, virus; Wool.

POTASSIUM. In growth and bone formation, **799**; sodium, chlorine and potassium requirements of growing pigs, **1074**; effect on electrocardigram of normal dogs and dogs with myocardial infarction, **2354**; experimental study in dogs on myocardial infarction and potassium tolerance, **2355**; blood-brain barrier in the horse, potassium content of cerebrospinal fluid and the blood serum, **3027**; respiration and paralysis in relation to magnesium-potassium antagonism, **3668**; effect of deficiency on gastrointestinal motility in rats, **3669**.
See also Cation-Exchange Resin; Diabetes.

POTASSIUM ARSENITE. See Poisons and Poisoning.

POTASSIUM CHLORIDE. In the treatment of Ketosis, milk fever and allied diseases, **2965**.

POTASSIUM IODATE. In the treatment of the fowl paralysis complex, **2071**.

POTASSIUM NITRATE. See Sugar Beet.

POTATOES. See Poisons and Poisoning.

POULTRY. See Ducks; Fowls; Geese; Turkeys.

POX DISEASES.
General. Cow pox-variola vaccine, **1008**; immunological study of pox viruses, **1679**; control of fowl pox with pigeon-pox vaccine, **2005**; serological study of the soluble antigens of variola, vaccinia, cow pox and ectromelia viruses, **3221**; study on viruses of variola, vaccinia, cow pox and ectromelia by means of neutralization tests on the chorio-allantois with unabsorbed and absorbed immune sera, **3222**.
Cow Pox. The purification of vaccine with penicillin and sulphathiazole, **364**; cow pox-variola vaccine, **1008**; an outbreak at Marsh Gibbon, Bucks, **2892**; in Zanzibar, **3419**.
Fowl Pox. The preparation of vaccine, **366**; electron microscopy of fowl pox virus, **713**; immunization with virulent fowl pox virus, **1351**; control of fowl pox with pigeon-pox vaccine, **2005**; structure of the virus, **2574**; report, Swaziland, **2770**; host-cell-virus relationship in fowl pox, growth in tissue culture and inclusions produced by virus on the chick chorio-allantoic membrane, **3545**; in Cyprus, **3766**.
Pigeon Pox. A fowl pox vaccine from pigeon pox virus, **366**; control of fowl pox with pigeon-pox vaccine, **2005**.
Sheep Pox. A virulent sheep pox virus vaccine (ovination), **365**.
Smallpox. Feulgen reaction for laboratory diagnosis, **714**; cow pox-variola vaccine, **1008**; formolized smallpox vaccine, **1352**; does vaccination help to spread smallpox? **3546**; infection and immunity, **3547**.
Swine Pox. In Italy, **712**.
Vaccinia. Neutralization of vaccinia virus by gamma globulin, **1007**; pulped material from buffalo calves for haemagglutination through vaccinia virus and effect of rabbit immune serum, **2572**; penicillin for purification of vaccine lymph, **2573**; effect of cortisone on infected g. pigs, **3333**.

P.P.D. See Mycobacterium Tuberculosis Infection, tuberculin test.

PR 8 STRAIN. See Influenza, virus.

PREEN GLAND. Histology, **864**.

PREGNANCY.
General. Iso-immunization of pregnancy in haemolytic disease of new-born, **103**; mucous plug in pregnancy and oestral secretion of the cow, **223**; ovary-spleen transplantation in rats and effect of castration and pregnancy, **467**; effect of nutrition on in-lamb ewes, **470**; sex stimulation by pregnant mares' whole blood, **588**; functions of the endocrine system in pregnancy, **860**; passage of antibodies from mother to embryo in rabbits, **1027**; duration of pregnancy, in cows, **1513**; "bulldog calf" after prolonged pregnancy, **1546**; beta-glucuronidase activity in pregnant rats, **1849**; uterine response to drugs in early pregnancy, **2116**; haematology in pregnant dogs, **2140**; effect of menstrual cycle and pregnancy on human cervical secretions, **2150**; heat production and cardio-respiratory activities during gestation and lactation in cattle, **2695**; iodine content of the ovary in the pregnant cow, **3047**; induced pregnancy in a bitch following severe total body X-irradiation, **3085**.
See also Genital System; Hyaluronidase; Parturition; Reproduction.
Diagnosis. In mares by examination of blood for hormones, **584**; by examination of the viscosity of cervical mucus in cows, **585**; book, **631**; oestrogen excretion by pregnant ewes, **1173**; in mares, using a male frog, **1535**; urine pregnancy test in mares, **1536**; white lupin test, **2165**; in farm animals using an Indian toad (Bufo melanostictus), **2166**; with X-rays, in ewes, **2418**; intra-ocular graft of the ovary in the spayed doe, use in pregnancy testing, **3377**; a general account, **3738**.
Diseases. The foetal adrenals in maternal toxaemias, **1519**; foetal death and maldevelopment resulting from maternal vitamin A deficiency in the rat, **1771**; ketosis in pregnant ewes associated with parasitism, **2348**.

PREGNENOLONE. Effect on spermatogenesis in hypophysectomized rats, **878**.

PROGESTERONE. Ovulation in the rabbit following oestrogen-progesterone treatment, **877**; progesterone and desoxycorticosterone metabolism in rabbit does of endogenous and exogenous origin, **3082-3083**; effect on arterial system of the uterus in the cow, **3742**.

PROGUANIL. See Paludrine.

PROLACTIN. See Hormones.

PRONEPHROS. Nephric development and pronephros in sheep, **2147**.
See also Mesonephros.

PROPIONIC ACID. See Digestive System, rumen; Veillonella.

PROPHYLENE GLYCOL. See Technique and Apparatus, staining.

PROSTATE. See Genital System, prostate.

PROTAMINE. See Foot and Mouth Disease, immunology.

PROTAMONE. See Thyroid Gland, iodinated proteins.

PROTEINS. The proteins of boar and ram spermatozoa, **566**; clearance of some proteins by the dog kidney, **1848**; plasma iron and saturation of plasma iron-binding protein in dogs, **2080**; significance of protein in vitamin E deficiency, **2324**; certain amino-acids in tuberculin protein fractions, **2825**; adsorption of proteins on erythrocytes treated with tannic acid and subsequent haemagglutination by antiprotein sera, **3620**; occurrence in the rabbit of acute phase protein analogous to human C-reactive protein, **3621**.
See also Agene; Amino Acids; Animal Protein Factor; Blood, serum; Lipoproteins; Nucleoproteins; Nutrition; Urinary System, diseases.
PROTEUS. The differentiation of Proteus from other enteric organisms, **1211**; pathogenicity of Proteus vulgaris for cattle, **1273**; demonstration of chromatinic bodies of Bact. coli and P. vulgaris under the phase contrast microscope, **1623**; cultural differentiation, **2504**; antigenic relationship with Br. suis, **3493**; standardization of serological tests for diagnosis of the typhus group of fevers, **3606**.
PROTHROMBIN. See Blood, prothrombin.
PROTOPORPHYRIN. See Porphyrins.
PROTOSTRONGYLUS. P. rufescens in sheep in the U.S.A., **1419**.
PROTOZOA, GENERAL. Quaternary Ammonium Compounds for prevention of protozoan poultry diseases, **63**; protozoa affecting sheep and goats in India, **3199**.
See also Amoeba; Anaplasma Infection; Antibiotics, general; Babesia Infection [Piroplasmosis]; Committees, Conferences and Congresses; Cytauxzoon Sylvicaprae; Digestive System, ruminant digestion; Eimeria Infection [Coccidiosis]; Eperythrozoon Infection; Giardia; Haemoproteus Infection; Histomonas Meleagridis Infection [Blackhead]; Leishmania Infection; Leucocytozoon Infection; Plasmodium Berghei; Plasmodium Gallinaceum; Plasmodium Infection; Plasmodium Lophurae; Technique and Apparatus, protozoological; Theileria Infection; Toxoplasma Infection; Trichomonas Foetus; Trichomonas Infection; Trypanosoma Infection.
PSEUDOMONAS. The production of hydrogen sulphide by Ps. pyocyanea, **943**; probable cause of otitis in pigs, **2096**; cultural differentiation, **2504**; in burns, and polymyxin therapy, **3478**.
PSITTACOSIS. Serological diagnosis in fowls and ducks, **392**; action of penicillin in human infection, **736**; in South Australia, **1893**.
See also Abortion.
PSITTACOSIS-LYMPHOGRANULOMA GROUP. Effect of antibiotics on agents of the group, **2023-2024**; enzootic (psittacosis like) abortion in ewes, **2025**; virus of enzootic abortion in ewes: antigenic relationship with psittacosis group, **2903**; enzootic abortion in ewes, **3566**.
See also Pneumonitis, Feline.
PTERIS AQUILINA. See Bracken.
PTEROYLGLUTAMIC ACID. See Glutamic Acid.
PUBLIC HEALTH. Public health bacteriology and parasitology, a textbook, **288**; regulations relating to milk, **1178**; possible significance of milk and water in spread of virus infections, **1179**; examination of milking utensils by the swab method, **1180**; J.P.H.D. manure treatment midden, **1227**; Institute of Public Health and Tropical Diseases, Mexico, **1527**; the Cattle Slaughtering and Diseased Animals and Meat Act, 1902-47, **1852**; compulsory cattle examination in Saxony, **2736**; book, inspection of food stuffs, **3130**; organisation of a syringe service, **3763-3764**.
See also Bacillus Anthracis Infection (Anthrax); Carcass Disposal; Dust; Food Hygiene; Law; Milk and Milk Products; Mycobacterium Tuberculosis Infection, immunization (B.C.G.); Poisons and Poisoning; Rabies; Radioactive Isotopes; Reports; Schistosoma Infection; Sewage; Smog; Vermin Control; Water; Whales.
PUERPERAL ACETONAEMIA. See Ketosis.
PUERPERAL COLLAPSE. See Milk Fever.
PUERPERAL PARESIS. See Milk Fever.
PUERTO RICO. See Brucella Infection, in cattle; Schistosoma Infection.
PULLORUM DISEASE. See Salmonella Pullorum Infection.
PULSE. See Circulatory System, general.
PURPURA. Haematology in equine purpura haemorrhagica, **810**.
P.V.M. See Pneumonia, virus [mice].
PYELONEPHRITIS. See Corynebacterium Infection, in cattle.
PYRETHRUM. Piperanyl butoxide activation of pyrethrin esters by lipase inhibition, **2131**.
See also Ticks, control.
PYRIBENZAMINE. In various diseases of cattle and horses, **3702**.
PYRIDOXINE. See Vitamins, vitamin B_6.
PYRROE. The antibacterial action of some pyrrole derivatives, **1488**.
PYRUVIC ACID. The possible role of some intermediary metabolites in general pathology, **2970**.

Q

"Q" FEVER. See Rickettsia Infection, Q fever.
QUAIL. The toxicity of flesh of quails after ingestion of seeds of hemlock (Conium maculatum) seeds or Oenanthe crocata, **1803**; sulphamethazine and sulphaquinoxaline treatment of ulcerative enteritis, **3598**.
QUATERNARY AMMONIUM COMPOUNDS. In treatment of protozoan diseases of fowls, **63**; treatment of favus with quaternary ammonium compounds, **980**.
QUERCETIN. See Neoplasms, treatment.
QUINACRINE. See Theileria Infection, treatment and control.
QUININE. Resistance of Pl. gallinaceum, **3200**.
QUINOLINE. The prophylactic effect of a quinoline derivative in blackhead, **1323**; tuberculostatic action of quinoline derivatives, **1596**.

R

RABBITS. See Aujeszky's Disease; Blood; Bones, diseases; Books, anatomy; Brucella Tularensis Infection [Tularaemia]; Circulatory System, aorta; Clostridium Tetani Infection [Tetanus]; Distemper, Dog, immunology; Eimeria Infection [Coccidiosis], in rabbits; Enzymes; Foetus; Genital System, menstrual cycle, semen and spermatozoa, vagina; Immunology, General, anaphylaxis; Influenza, general; Mammary Gland; Mange, general; Mycobacterium Tuberculosis Infection, tuberculin test; Neoplasms; Newcastle Disease; Oedema; Pasteurella Infection, general; Pediculus; Polyploidy; Pregnancy, general; Progesterone; Saccharomyces; Sex; Streptococci; Swine Fever; Toxoplasma Infection; Vent Disease; Zootechny.
RABIES.
General. In Mexico, **72**; in South Africa, **1230**; in Trinidad and Tobago, **1232** and **1234**; in Nigeria, **1237**; epidemic in Germany, **1342**; in Palestine, **1343**; attempts to produce Negri bodies in embryonic nervous tissue of mice in the absence of rabies virus, **2001**; in Canada, **2197**; in California, **2203**; in Yugoslavia, **2205**; in Germany, **2460**; in Ceylon, **2767**; in Nyasaland, **2769**; in N. Rhodesia, **2774**; use of streptomycin and penicillin in the diagnostic inoculation of mice, **3215**; in Northern Rhodesia, **3421**; report, committee on rabies, **3423**; in Madagascar, **3425**; in Cuba, **3544**; in Cyprus, **3766**; in Nyasaland, **3768**.
Immunology. Complement fixing antibodies against brain tissue in sera of antirabies vaccine treated persons, **416**; neuroparalysis in dogs, after antirabic vaccination, **1348**; 25 years experience of vaccination of animals, **1349**; prevention of shock by phenolized vaccines, **1350**; monkey brain vaccine, **1676**; aluminium gel vaccine, **2045**; prevention by vaccine, **2270**; mustard-inactivated vaccine, **2271**; control by mass vaccination of dogs in Roumania, **2571**; group immunity between rabies and distemper, **2891**; simple vaccine in Turkey, **3217**; ultraviolet irradiation in the production of potent vaccines, **3220**; in Morocco, **3424**.
See also Rabies, virus.
In Man. In Mexico, **71**; in man, **73**; complement fixing antibodies against brain tissue in sera of persons treated with antirabies vaccine, **416**.
See also Rabies, virus.
In Wild Animals. In Mexico, **72**; in foxes, badgers and deer, **711**; in rats, **1346**.
Treatment and Control. International control, **363**; prevention, **1341**; failure of antibiotics in experimental rabies, **1347**; prevention in Indo-China and the Far East, **1678**; police measures in Italy, **2269**; prophylaxis in Lisbon, **3216**; epidemiology and control in Turkey, **3218**; control in India, **3219**.
See also Rabies, immunology; virus.
Virus. Cultivation of fixed virus on embryonated eggs, **74**; characteristics of a Moroccan street virus, **1344**; virulence of fixed virus, **1345**; comparison of a local Portuguese strain with Pasteur fixed rabies virus, **1675**; isolation from three human cases, **1677**; a strain of virus with reinforced virulence, **2569**; action of culture filtrates of B. subtilis on virus, **2570**.
See also Rabies, immunology.
RADIATION SICKNESS. Acute radiation sickness in goats, **1222**; acute radiation syndrome, **1890**; treatment with dramamine, **2374**.
RADIOACTIVE ISOTOPES. Production and availability, **189**; dosage determination, **190**; biological hazards and toxicity, **191**; equations for tracer experiments, **192**; transfusion of leucocytes labelled with radioactive phosphorus, **219**; distribution of radioactive cobalt in the rat, **478**; effect of magnesium on P^{31} and P^{32} partition in muscle, **535**; determination of bloood volume using P^{32} labelled red cells, **608**; dosage determination, **826**; secretion of radio-calcium in milk, **1502**; rates of turnover and biologic decay of chloride and chloride space in the dog determined with the long-life isotope, CL^{36}, **1559**; radioactive

RADIOACTIVE ISOTOPES—[cont'd.]
studies of phosphorus metabolism of bacteriophage with Bact. coli, **1713**; use of labelled amino acids in the study of protein metabolism of normal and malignant tissues, **1753**; studies of lymphocytes from persons treated with radioactive iodine, **1808**; preparation of bacteriophage labelled with radioactive phosphorus, **2037**; single cell autographs of bone marrow and blood from rats using radioactive phosphorus, **2073**; plasma iron and saturation of plasma iron-binding protein in dogs as related to the gastrointestinal absorption of radioiron, **2080**; radioiron absorption in anaemic dogs, **2081**; a new public health problem, **2195**; book, isotopic tracers in medicine and biology, **2215**; effect of polonium[210] and selenium[75] in experimental Schistosoma mansoni infection in mice, **2307**; the effect of radioactive colloidal gold on the development of oral structures in mice, **2363**; absorption of iodine-131 labelled iodinated casein in sheep, **2725**; uptake of phenothiazine labelled with sulphur-35 by tissues of nematodes and their hosts, **2950**; radioactive di-iodo[131] fluorescein for diagnostic studies, **3022**; a lucite syringe shield for protection against irradiation during intravenous administration of beta-emitting radioisotopes, **3099**; isotopes in medicine and biology, **3119**; production of hypochlorhydria by beta radiation of the stomach, **3694**; determination of circulating red cell volume by radioactive chromium, **3717**.
See also Leucosis.

RADIOACTIVITY. Passage of radioactive erythrocytes from peritoneal cavity into blood stream during experimental ascites, **1169**; protection of workers against radioactive substances, **1888**; "strip-coating" technique, **2451**.
See also Atomic Energy; Immunology, antibodies; Radiation Sickness; Radioactive Isotopes.

RAILLIETIA AURIS. In cattle in Colorado, **113**.

RANA. See Pregnancy, diagnosis; Staphylococci.

RANUNCULUS. See Histoplasma Farciminosum Infection [Epizootic Lymphangitis]; Poisons and Poisoning, plant poisoning.

"RATANJOT." See Dyes.

RAT-BITE FEVER. See Actinomyces Muris-Ratti Infection; Spirillum Infection.

RATS. Antibodies against viruses of encephalomyocarditis group in wild rat serum, **75**; domestic rats of Malaya, **1887**.
See also Actinomyces Infection; Adenine; Amoeba; Arthritis; Bracken; Cotton Rats; Enzymes; Genital System, vagina; Glutamic Acid; "Grey Lung" Virus; Hibernation; Hormones; Hydrocephalus; Leucosis, in rodents; Liver; Neoplasms; Manganese; Newcastle Disease, general; Nutrition; Poisons and Poisoning; Rabies, in wild animals; Rickettsia Infection, murine typhus; Rickettsia Infection, scrub typhus; Streptococcus Infection, general; Trypanosoma Evansi Infection; Trypanosoma Vivax Infection; Urinary System, diseases; Vermin Control; Vitamins.

"RECONOX." See Phenothiazine.

"RED WATER." See Babesia Infection, in cattle.

REFLEXES. See Nervous System, general.

RENIN. Renin proteinuria in the rat, **1159**; sensitivity and substrate levels in adrenalectomized dogs, **3037**.

REPELLENTS. A tick repellent, **431**; a law case on "Kleggolje" poisoning, a tabanid repellent used in Norway, **2107**.

REPORTS.
International. F.A.O. meeting on livestock breeding under tropical and subtropical conditions held at Lucknow, U.P., **3086**; First Session of Expert Committee on Rabies, **3423**.
Australia. Department of Agriculture, Western Australia for 1947, **621**; Northern Territory, Animal Industry Division, for 1946-47, 1947-48 and 1948-49, **272**, **273** and **274**; Council of the Institute of Medical and Veterinary Science 1948-1949, South Australia, **1893**; Department of Agriculture and Stock, Queensland, **3412**; Department of Agriculture, Western Australia, **3413**.
Basutoland. Department of Agriculture, Basutoland, **1566**.
Bechuanaland Protectorate. Veterinary Department, **1239**; Veterinary Division, **2772**; Veterinary Department, **2773**.
Bermuda. Department of Agriculture, **2778**.
British Guiana. Director of Agriculture, **3416** and **3417**.
British Honduras. Department of Agriculture, **2776-2777**.
Canada. Department of Agriculture, Province of Alberta, **1564** and **1565**; Veterinary Director General, **2197**; Ontario Veterinary College, **2762**; Ontario Research Foundation, **3411**.
Ceylon. Acting Director of Agriculture, **2766**; Director of Agriculture, **2767**.
Cyprus. Department of Agriculture, **900**; Chief Veterinary Officer, **1231**; investigations and developments in agriculture, **2781**; Veterinary Service, **3766**.
Denmark. Veterinary Service, **2459**.
East Africa. Uganda Veterinary Department, **2199**; East African Research Organization, **2200**; Department of Veterinary Services, Kenya, **2456**; East African Tsetse and Trypanosomiasis Research and Reclamation Organization, **2457**; Committee of Inquiry appointed by the East Africa High Commission into the causes of failure of K.A.G. and other vaccines, **2589**; Veterinary Laboratory, Entebbe, **2768**; East Africa High Commission, **2771**; East African Veterinary Research Organization, **3418**; Zanzibar Protectorate, Department of Agriculture, **3419** and **3420**.
Falkland Islands. Agricultural Department, **2780**.
Fiji. Department of Agriculture, Fiji, Annual Reports for 1947 and 1948, **1235** and **1236**.
French Guiana and Inini. Pasteur Institute, French Guiana and Inini, **2463**.
Gambia. Veterinary Department, **2775**.
Germany. U.S. Army Veterinary Corps in Germany, **1854-1855**; Military Government Veterinary Report, **2460**.
Gold Coast Colony. Department of Animal Health, **3767**.
India. Civil Veterinary Department, Orissa, **2765**.
See also Reports, international.
Kenya. See Reports, East Africa.
Leeward Island. Director of Agriculture, **622**, **2779**, **3415**.
Madagascar. Archives of the Pasteur Institute, Tananarive, **3425**.
Malta. Department of Agriculture, **3414**.
Morocco. Pasteur Institute, **3424**.
Netherlands, Veterinary Department, Friesland, **2458**; State Veterinary Serum Institute, **2782**.
New Zealand. Department of Agriculture, **2763**; Animal Research Division, Department of Agriculture, **3110**.
Nigeria. Annual Reports of the Veterinary Department, Nigeria, for 1947 and 1948, **1237-1238**.
Northern Rhodesia. Veterinary Department, **2774** and **3421**.
Norway. Director of Veterinary Services, **3770-3771**.
Nyasaland Protectorate. Veterinary Department, **2769** and **3768**.
Republic of Ireland. Minister for Agriculture, 1948-49, **623**; Minister for Agriculture, 1949-50, **3769**.
Sierra Leone. Veterinary Department, **2201** and **3422**.
St. Kitts-Nevis. Veterinary Department, **2198**.
Swaziland. Livestock and Agricultural Department, **2770**.
Sweden. Civil Veterinary Service, 1945, **902**; Civil Veterinary Service, 1946, **3772**.
Tanganyika. See Reports, East Africa.
Trinidad and Tobago. Administration Reports of the Director of Agriculture, Trinidad and Tobago, for 1946, 1947 and 1948, **1232-1234**.
Uganda. See Reports, East Africa.
Union of South Africa. Abattoir and Livestock Market Department, **275**, **276** and **899**; Director of Veterinary Services, Union of South Africa, **1230**; South African Institute for Medical Research, **2764**.
United Kingdom. West of Scotland Agricultural College, **620**; Animal Health Trust 1947-48, **897**; Medical Research Council 1945-1948, **898**; National Institute for Dairy Research, Reading, **1228**; Agricultural Research Institute, Hillsborough, Northern Ireland, **1229**; Lister Institute, **1562**; Hannah Dairy Research Institute, **1563**; the provision of safe milk: report of the Joint Committee of the B.M.A. and N.V.M.A., **2406**; Animal Health Trust, **3455**; Committee on milk services, Scotland, **2733**; London School of Hygiene and Tropical Medicine, **2761**; Veterinary Officer, Newcastle upon Tyne, **3410**.
U.S.A. Rhode Island Agricultural Experiment Station, **901**; National Livestock Loss Prevention Board, U.S.A., **1567**; Agricultural Experiment Station, South Dakota College of Agriculture, Annual Report, **1568**; American Army Veterinary Corps in Germany, **1854-1855**; College of Agriculture, Cornell University, **2202**; Los Angeles County Livestock Department, **2203**; Massachusetts Agricultural Experiment Station, **2204**; School of Veterinary Medicine Michigan State College, East Lansing, **2461**; Department of Agriculture, California, **2462**; Bureau of Animal Industry, Agricultural Research Administration, **2783**; State of California, Department of Agriculture, Division of Animal Industry, **2784**; Director of Purdue University Agricultural Experiment Station, Lafayette, Indiana, **2785**; Regional Poultry Research Laboratory, East Lansing, Michigan, **2786**; Department of Agriculture, Agricultural Experiment Stations, **3426**; Regional Poultry Research Laboratory, East Lansing, Michigan, **3427**; Georgia Coastal Plain Experiment Station, **3428**; University of Nevada Agricultural Experiment Station, **3429**; Rockefeller Foundation, International Health Division, **3430**; Regional Poultry Research Laboratory, East Lansing, Michigan, **3773**; Department of Agriculture (equine infectious encephalomyelitis), **3774**; Agricultural Experiment Station, South Dakota State College of Agriculture and Mechanic Arts, **3775**.
Yugoslavia. Serbian Veterinary Bacteriological Institute, **2205**.
Zanzibar Protectorate. See Reports, East Africa.

REPRODUCTION. Synthetic diets for reproduction and growth in pigs, **142**; manganese and growth and reproduction in swine, **152**; pteroylglutamic acid and reproduction in the rat, **483**; effect of sulphaguanidine on reproduction, **858**; number of litter and incidence of mammary tumours in mice, **1424**; effect of vitamin A, **1439**; effect of vitamin A supplements on reproduction in grazing ewes, **1768**; influence of time of service on conception rate in mares, **1860**; relation of post-partum interval to reproductive efficiency in cows, **1861**; natural breeding in cattle, **1868**; reproduction in a dairy herd and its relation to brucellosis vaccination, **1946**; effect of light on reproduction in ferrets and mink, **2174**; reproductive disorders in swine, **2431**; age at first calving in relation to subsequent performance, **2434**; photoperiodicity in Suffolk sheep, **2435**; swine still-birth in relation to Japanese encephalitis, **2579**; studies on epidemic swine still-birth in Japan in relation to encephalitis in horses, **2580**; histopathological studies on swine still birth, **2581**; effect of sterile copulation on time of ovulation in dairy heifers, **3078**; nutritional factors in reproductive failure, **3748**.
See also Eggs, Hen, hatchability; Embryos, Fowl; Embryos, Mammalian; Fertility; Foetus; Genital System; Heredity; Insemination, Artificial; Multiple Births; Pregnancy; Sex Hormones; Sterility; Vitamins, vitamin E; vitamin B_{12}; Zootechny.

RESEARCH INSTITUTES.
Belgian Congo. Institute for Scientific Research, **2742**.
Germany. Veterinary laboratories in the U.S. zone, **2743**; collected reprints of the Veterinary Research Institute, Riems, **3104**.
Holland. See Reports, Holland.
Hungary. Serological institutes, Hungary, **1187**.
Madagascar. See Reports, Madagascar.
Mexico. Institute of Public Health and Tropical Diseases of Mexico, **1527**.
Morocco. See Reports, Morocco.
Uganda. See Reports, East Africa.
Union of South Africa. See Reports, Union of South Africa.
United Kingdom. See Reports, United Kingdom.
U.S.A. Rhode Island Foot and Mouth disease laboratory, **70**; Rutgers University, Institute of microbiology, **233**; safety measures in a TB. laboratory, **2410**.
See also Reports, U.S.A.
U.S.S.R. Visit to microbiological laboratories in the Soviet Union, **619**; 25 years of the Uzbekistan veterinary research institute, **3730**.
West Africa. International committee for trypanosomiasis research, West African Institute for trypanosomiasis research, a review, **3066**.
Yugoslavia. See Reports, Yugoslavia.

RESPIRATORY SYSTEM.
General. Pharmacodynamics of pulmonary absorption-aerosol and intratracheal penicillin, **1129**; absence of respiratory change or manifest tetany with high plasma pH produced by bicarbonate in dogs, **1158**; respiratory metabolism in poultry, **1162**; electrocardiographic studies in dogs with respiratory arrhythmia, **2100**; normal respiration rate in Philippine mares, **2706**; respiration in relation to magesium-potassium antagonism, **3668**; mechanics of respiration in the dog as reflected by changes in intraperitoneal pressure, **3721**.
See also Helminth Parasites; Temperature.
Diseases. Effect of human influenza virus (type A) on incidence of lung tumours in mice, **455**; A.C.T.H. and cortisone in bronchial asthma, **1143-1144**; epithelioma of the nasal sinuses in the horse, **1422**; experimental epidemiology of respiratory infections, **1468**; pulmonary hypertrophic osteo-arthropathy (Marie's disease) in a dog, **1782**; analysis of normal g. pig lung for factors determining pulmonary oedema and congestion, **2361**; arsenic treatment of verminous bronchitis, **2630**; a respiratory disease in g. pigs transmissible to man, **3235**.
See also Atelectasis; Bronchitis, Infections; Broncho-Pneumonia, Enzootic; Dyspnoea; Emphysema; Fowls, virus diseases; Granuloma; "Grey Lung" Virus; Haemophilus Gallinarum Infection (Avian Coryza); Histoplasma Farciminosum Infection (Epizootic Lymphangitis); Influenza; Laryngo-Tracheitis, Infections; Mycobacterium Tuberculosis Infection, Treatment; Oedema; Pleuro-Pneumonia, Bovine Contagious; Pleuro-Pneumonia, Caprine Contagious; Pneumonia; Pneumonyssus; Rhinitis, Infectious Atrophic; Silicosis; "Snuffles"; Streptococcus Infection, in cattle; Virus Pneumonia.
Lungs. Pulmonary retention of aerosols, **845**; analysis of normal g. pig lung for factors of pulmonary oedema and congestion, **2361**.
See also Emphysema; Influenza, virus; Mycobacterium Tuberculosis Infection, treatment; Oedema; Pneumonia; Respiratory System, diseases; Streptococcus Infection, in cattle; Virus Pneumonia.
Nose. Epithelioma of the nasal sinuses of the horse, **1422**; the naso-lachrymal duct in the goat, **1828**; infection of mice with TB. via the nose, **1922**.
See also Rhinitis, Infectious Atrophic.

RETICULO-ENDOTHELIAL SYSTEM. Participation of the reticulo-endothelial system in alarm reaction, **538**; influence of oestrogenic hormones on the reticulo-endothelial system in g. pigs, **2423**; effect of cortisone on reticulo-endothelial system in hyperimmunized rabbits, **3020**; a lipolytic enzyme in reactive histiocytes of g. pigs with experimental encephalomyelitis, **3557**.

RETICULOSIS. See Leucosis, treatment.

RHABDITIS. Dermatitis in cattle associated with Rhabditis, **1411**.

RHESUS FACTOR. Its significance in veterinary medicine, **1399**.

RHEUMATOID ARTHRITIS. See Arthritis.

RHINITIS, INFECTIOUS ATROPHIC. Inherited facial conformation and susceptibility, in swine, **2986**; in U.S.A., **3428**; aetiology, **3684**.

RHINOSPORIDIUM. Probable cause of nasal granuloma in cattle, **3314**.

RHIPICEPHALUS. See Ticks, Ixodidae.

RHODESIA. See Northern Rhodesia; Southern Rhodesia.

RHODNIUS. See Bugs.

RHODODENDRON. See Poisons and Poisoning, plant poisoning.

RHUBARB. See Poisons and Poisoning, plant poisoning.

RIBOFLAVIN. See Vitamins, vitamin B_2.

RIBONUCLEIC ACID. See Vitamins, vitamin B complex.

RICE. See Nutrition, general.

RICINUS COMMUNIS. See Poisons and Poisoning, plant poisoning.

RICKETS. In sheep in East Anglia, **1438**; rachitogenic effect of dried yeast in pig diets, **2643**; rachitogenicity of green oats, **3671**.

RICKETTSIA BURNETI. R. burneti, from Moroccan ticks, **401**; R. burneti in Amblyomma variegatum in French Equatorial Africa, **402**; recovery of R. burneti from dust in California, **747**; morphology and biological relationship of R. burneti, **1711**; viability in vitro, **2041**; agent of Moroccan Q fever, **2042**; experiments with various strains, **2600**; resistance to physical and chemical agents, **3605**.
See also Rickettsia Infection, Q fever.

RICKETTSIA CANIS. See Rickettsia Infection, in dogs.

RICKETTSIA CONJUNCTIVAE. See Rickettsia Infection, in goats.

RICKETTSIA CONORI. "Fièvre Boutonneuse" (R. conori) and Q fever in Rh. sanguineus, **2598**.

RICKETTSIA INFECTION.
General. Premunition in rickettsioses, **397**; tick-borne fever as cause of abortion in sheep, **743**; human and animal Rickettsia infections in French Equatorial Africa, **744**; Rickettsia infections of lice, **1405**; tick-borne fever as cause of abortion in sheep, **1706**; treatment with chloramphenicol, **2294**; action of aureomycin in experimental infections, **2295**; in the Sudan, in cattle, sheep and dogs, **3252**; standardization of serological tests for the typhus group of fevers, **3606**; comparative evaluation of complement-fixation techniques for diagnosis, **3607**.
In Cattle. In the French Sudan, **3252**.
See also Eyes, diseases; Rickettsia Infection, Q Fever.
In Dogs. Salmon disease in dogs and foxes, **98**; Rickettsia canis in dogs, in Chad, **99**; in the French Sudan, **3252**; treatment of experimental Salmon disease with sulphonamides and antibiotics, **3609**.
In Goats. Transmission of R. conjunctivae to goats, **742**; Q fever, **3253**.
In Man. Congolese red fever in Central Africa, **396**.
See also Rickettsia Infection, Q fever; Rickettsia Infection, scrub typhus.
Murine Typhus. In mites, **2044**; postinfection murine typhus antibodies in sera of rodents, **2911**; complement-fixing antibodies in human sera from Florida, **3608**.
Q Fever. In man and animals in Turkey, **398**; a survey, **399**; experimental, in man, **400**; in Strasbourg, **745** and **746**; epidemiology of an outbreak in Britain, **1379**; causative agent of an outbreak in Britain, **1380**; in Switzerland, **1381**; laboratory infection, **1382**; epidemic in a hospital in Germany, **1383**; in South Germany, **1384**; in farm animals in California, **1385**; in South California, **1386**; in Israel, **1707-1709**; vaccination in California, **1710**; in South Australia, **1893**; allergic reaction for diagnosis, **2038**; in South Australia, **2039**; experimental infection in domestic animals, **2040**; agent of Moroccan Q fever, **2042**; treatment with aureomycin, **2293**; the Mediterranean area, **2595**; in Algeria, **2596**; in Morocco, **2597**; "fièvre boutonneuse" and Q fever in Rh. sanguineus, **2598**; in Turkey, **2599-2601**; complement-fixation test for Q fever in sheep, **2919**; vaccination experiments, **2920**; role of goats in the spread, **3253**; in South Africa, **3254**; in Morocco, **3424**; epidemiology, **3603**; studies in Southern California and aureomycin treatment, **3604**.
See also Rickettsia Burneti.

RICKETTSIA INFECTION—[cont'd.]
Scrub Typhus. R. tsutsugamushi in rats and mites in Malaya, **403**; scrub typhus or tsutsugamushi disease, in Japan, **2043**; treatment with chloramphenicol, **2294**.
In Sheep. Tick-borne fever as cause of abortion in sheep, **1743**; enzootic (rickettsial?) abortion in sheep, **813**; tick-borne fever, a cause of abortion in sheep, **1706**; in the French Sudan, **3252**; Rickettsia phagocytophila the causative agent of tick-borne fever in sheep, **3602**.
See also Heart Water; Kerato-Conjunctivitis; Rickettsia Infecton, Q fever.
RICKETTSIA PHAGOCYTOPHILA. See Rickettsia Infection, in sheep.
RICKETTSIA TSUTSUGAMUSHI. See Rickettsia Infection scrub typhus.
RIFT VALLEY FEVER. In Kenya, **2456**.
RINDERPEST.
General. In Nigeria, **1237-1238**; skin lesions in rinderpest, **1363**; in Uganda, **2199**; in East Africa, **2200**; in the monsoon areas of Asia, **2281**; in Kenya, **2456**; in India, **2765**; Ceylon, **2766-2767**; N. Rhodesia, **2774**; Gambia Colony, **2775**; historial review, **3225**; Malta, **3414**; East Africa, **3418**; Gold Coast Colony, **3767**; Nyasaland, **3768**.
Immunology. Goat virus, **721**; killed and living vaccines, **722**; passage of virus in pigs, **2015**; use of pigs for production of lapinized virus, **2016**; standardization of sera and vaccines, **2017**; goat virus, **2018**; aluminium gel vaccine, **2045**; in Tanganyika, **2588**; report on failure of K.A.G. and other vaccines, **2589**; chick embryo vaccine research in Japan, **2902**; possibilities of using organs of calves with TB. for preparation of vaccine, **3560**; use of goat virus vaccine in the French Sudan, **3561**; use of rabbit virus in Egypt, **3562**; use of lapinized virus in Hong Kong, **3563**; use of lapinized virus vaccine in susceptible cattle, **3564**; in Japan, **3565**.
RING TEST. See Brucella Infection, Immunology.
RINGWORM. Ringworm of the scalp in man caused by Monilia felineum, M. lanosum and M. audouini, **53**; in horses in Fiji, **1235** and **1236**; survey of dermatophytoses in Great Britain, **1962**; in New Zealand, **2763**; inhibition of growth of M. audouini with neopyrithiamine, **2859**; in sheep in Uruguay, **3503**; in Norway, **3771**.
RIVOLTSIA. R. bifurcata in Australia, **621**.
RODENTS AND RODENT CONTROL. See Echinococcus; Guinea Pigs; Hamsters; Hares; Leucosis, in rodents; Marmots; Mice; Rabbits; Rats; Vermin Control.
ROENTGEN RAYS. See X-Rays.
ROOIBOK. See Antelopes.
ROTENONE. In control of warble fly, **3775**.
See also Ticks, control.
ROUGHAGE. See Digestive System, ruminant digestion; Milk and Milk Products, general, chemical composition; Nutrition.
ROUMANIA. See Anaplasma Infection; Rabies, treatment and control; Theileria Mutans.
ROUNDWORMS. See Nematodes.
ROUS SARCOMA. See Neoplasms.
RUANDA-URUNDI. See Theileria Infection, in cattle.
RUBARTH'S DISEASE. See Hepatitis, Canine Virus.
RUBBER. Toxicity of rubber for bull spermatozoa, **1533**.
"RUBBER SPLEEN." See Streptococcus Infection, in cattle.
RUMEN FLUKE. See Paramphistomum.
RUMINAL FLORA. See Digestive System, ruminant digestion.
RUTIN. Effect on splenectomized rats, **3330**.
RYE GRASS. Oestrogenic effect, **3743**.

S

SACCHAROMYCES. Nuclear cytology of S. cerevisiae, **996**; S. guttulatus infection in rabbits, **1967**.
SACCHAROSE. See Sugar.
SALICYLATES. Effect on anaphylactic shock in rabbits, **1807**; pharmacology of salicylates, **2680**.
SALIVA. Growth promoting effect of human saliva for hamsters, **1070**; group-specific substances in ass saliva, **1393**.
SALMON DISEASE. See Rickettsia Infection, in dogs.
SALMONELLA ABORTUS-EQUI INFECTION [EQUINE INFECTIOUS ABORTION]. In horses, **30**; serological diagnosis, **1939**; causing spinal paralysis in a horse, **2505**; in man and birds, **2506**; in mares and foals, **3481**.
SALMONELLA BRESLAU. See Salmonella Infection, in man.
SALMONELLA DUBLIN. In cattle, **1274**; in young goats, **1275**; in buffaloes, **2841**; causing diarrhoea in calves in Brazil, **3162**; in healthy pigs, **3163**.
SALMONELLA ENTERITIDIS. In silver foxes, **1276**; in O. lahorensis in Turkey, **2241**; in healthy pigs, **3163**.
SALMONELLA GALLINARUM INFECTION. Control of fowl typhoid, **954**; in Swaziland, **2770**; in Brit. Honduras, **2776-2777**; cultural variations in some strains, **3164**; comparison of sixteen antigens, **3483**; use of sulphaquinoxaline and sulphamethazine in fowl typhoid of turkeys, **3484**; in Cyprus, **3766**; in Nyasaland, **3768**; in Sweden, **3772**.
SALMONELLA GROUP. Classification of Salmonella species from animals, **948**; cultural differentiation, **2504**; isolation from faeces of domestic animals, **3480**.
SALMONELLA INFECTION.
General. Salmonella in shellfish, **232**; action of Salmonella endotoxin and antihistamine on allergic skin reactions, **420**; from dogs, cats and pigeons, **653**; in New Zealand, **947**; L. type colonies of S. typhi, **1280**; salmonellosis in live and slaughtered animals, **1624**; in slaughter animals, **1625-1626**; bovine carriers, **1627**; treatment of S. typhi-murium infection in ferrets, **1629**; in South Australia, **1893**; compact outfit for serological diagnosis of salmonellosis at meat inspection, **2160**; in French Guiana, **2463**; in domestic animals, **2507**; sterilization of infected meat by boiling, **2738**; in New Zealand, **3110**; in Madagascar, **3425**.
In Cats. Salmonella organisms from dogs, cats and pigeons, **653**; incidence in non-urban areas, **1940**.
See also Salmonella Pullorum Infection.
In Cattle. Salmonellosis in cattle, **945**; Salmonella dublin infection in cattle, **1274**; bovine carriers, **1627**; in French Guiana, **2463**.
In Dogs. Salmonella organisms from dogs, cats and pigeons, **653**; incidence of Salmonella infections in dogs and cats in a non-urban area, **1940**.
In Fowls. Sulphonamide treatment, **2840**.
See also Salmonella Abortus-Equi Infection; Salmonella Gallinarum Infection; Salmonella Pullorum Infection; Salmonella Thompson.
In Foxes. S. enteritidis in silver foxes, **1276**.
In Goats. S. dublin infection, **1275**.
In Horses. See Salmonella Abortus-Equi.
In Man. Infants as carriers, **317**; S. typhi infection transmitted by butter, **654**; Salmonella food poisoning in England and Wales, 1941-48, **1184**; Salmonella meat poisoning in a hospital, **1185**; food poisoning caused by S. breslau, **1278**; chloromycetin treatment of typhoid fever, **1279**; epidemic of typhoid fever due to ice-cream, **1628**; paratyphoid B epidemic from milk, **1941**; antiglobulin technique applied to the detection of non-agglutinating antibody against S. typhi O in human sera, **2184**.
In Sheep. In New Zealand, **946**.
SALMONELLA NESS-ZIONA. In fowls and man, **3167**.
SALMONELLA NEWINGTON. In healthy pigs, **3163**.
SALMONELLA PARATYPHI B. In healthy pigs, **3163**; infection in man and dog from pork, **3485**.
SALMONELLA PULLORUM INFECTION. Agglutination test in pullorum disease suitability of strains, **31**; pullorum disease in pheasants in Italy, **316**; effect of sodium sulphamerazine, **655**; S. pullorum infection in a cat, **951**; serological differentiation of S. pullorum strains, **952**; effect of sulphadiazine, **953**; isolation of S. pullorum from serologic reactors, **1277**; cross reactions with brucellosis, **1948**; in U.S.A., **2204**; in Yugoslavia, **2205**; in Denmark, **2459**; causes of non-specific reactions, **2508**; role of the cockerel in the dissemination, **2842**; effect of decomposed fish meal on non-pullorum reactions, **2843**; cultural variations in some strains, **3164**; disadvantages of standard antigens in pullorum tests, **3165**; effect of sulphamerazine on reactors, **3166**; in Australia, **3413**; artificial infection in turkeys, **3482**; in Norway, **3771**.
SALMONELLA THOMPSON. Causing an outbreak in fowls, **2509**.
SALMONELLA TYPHI. See Salmonella Infection, in man.
SALMONELLA TYPHI-MURIUM. S. typhi-murium isolated from beef carcass, **227**; transmitted by butter, **654**; S. typhi-murium infection in a stock of g. pigs, **949**; failure to set up infection in mink and foxes with S. typhi-murium suspended in mucin, **950**; in hens' eggs, **955**; food poisoning from duck egg, **956**; treatment in ferrets, **1629**; penicillin-screened auxotrophic mutations in S. typhi-murium and X-ray dosage, **1630**; in duck eggs as cause of human food poisoning, **1942**; food poisoning from duck eggs and trials with chloramphenicol, **2242**; augmenting action of lecithin and lipoids of A. fumigatus and Listeria monocytogenes in antibody production using S. typhi-murium as an antigen, **2297**; in French Guiana, **2463**; food poisoning by meat, **2739**; in healthy pigs, **3163**; symbiotic bacteriophages of, **3600**; "excessive dose" phenomenon encountered in investigation of S. typhi-murium and its symbiotic bacteriophages, **3601**.
SALMONELLA WORTHINGTON. In domestic animals, **2507**.
SALT. See Sodium Chloride.
SANDFLY. See Phlebotomus.
SARCOMA. See Neoplasms.
SARCOPTES. See Mange.
SARIOSTEMMA VIMINALE. See Poisons and Poisoning, plant poisoning.
"SCALY LEG." See Cnemidocoptes.
SCARLET FEVER. See Food Hygiene, milk inspection.
SCHELORIBATES LAEVIGATUS. Host for M. expansa in Quebec, **2308**.

SCHISTOSOMA INFECTION. Control of snails in schistosomiasis areas in Puerto Rico, **436**; agglutination of cercariae of S. mansoni by immune sera, **753**; phase contrast microscopy of miracidium of S. mansoni, **1046**; schistomiasis in animals, **2059**; polonium^{210} and selenium^{75} in experimental infection in mice, **2307**; Schistosoma bovis in the pancreas in cattle in Italy, **2622**; in Ceylon, **2766**; a public health problem in the Pacific, **3269**; effect of ultrasonic vibrations on Schistosomiasis in mice, **3283**; in domestic animals, **3635**.
SCHISTOSOMOPHORA. See Snails.
SCHONGASTIA INDICA. Vector of murine typhus, **2044**.
SCLEROSIS. See Circulatory System, arteries.
SCOURS. See Diarrhoea, in calves.
SCRAPIE. A study, **2283**; characteristics, **3228**.
SCRUB TYPHUS. Rickettsia Infection, scrub typhus.
SCURVY. See Vitamins, vitamin C.
SEBACEOUS GLANDS. Effect of androgen in skin and sebaceous glands of hamsters, **541**.
SECRETIN. Assay and distribution of secretin, **1844**.
SELENIUM. Methionine in selenium poisoning, **178**; in British Honduras, **2776**; in U.S.A., **3775**.
See also Radioactive Isotopes.
SEMEN. See Genital System, semen anl spermatozoa.
SEMEN EXTENDERS. See Insemination, Artificial.
SENECIO. See Poisons and Poisoning, plant poisoning.
SERUM PROTEIN. See Blood, serum.
SERVICES, VETERINARY.
Argentina. Agriculture, husbandry, veterinary service, epizootics, abattoirs and export in the Argentine, **1556**.
Australia. N.S.W. veterinary services with flying doctor base and shortwave station, **1856**; the Tasmanian veterinary scheme, **2741**.
Germany. See Army Veterinary Services.
Poland. Polish veterinary service, **2744**.
U.S.S.R. In the Tambov region, U.S.S.R., **234**; guide for veterinarians in the three year animal husbandry plan, **1871**; veterinary propaganda in Russia, **1892**; work of the Vorotynsk veterinary area, **3068**; regular veterinary inspection and records of horses in the U.S.S.R., **3397**; history of veterinary scientific societies, **3762**.
U.S.A. See Reports, U.S.A.
SETARIA. In a horse infected with Japanese equine encephalitis, **2576**; occurrence of S. cervi in cattle in Surinam, **2946**.
SEWAGE. Presence of poliomyelitis virus in, **97**; growth of poliomyelitis virus on, **394**; sewer gas poisoning in a horse, **1116**; recovery of tubercle bacilli from sewage, **1592**; survival of tubercle bacilli, **3731**.
SEX. Sex reversal, **222**; sexual activity in the male rabbit and testosterone propionate, **224**; sex-linked haemophilia in dogs, **249**; sex stimulation in mares by pregnant mares' whole blood, **588**; hermaphroditism in cattle, **883**; tropical climates and sexual activity, **1202**; sexual season of the ewe and daylight environment, **1516**; sex-ratio of calves produced by natural and artificial insemination, **1532**; in relation to intrarenal pressure, **2149**; role of the thyroid in sexual development of the male, **3052**; relationship of semen production to sexual excitement in dairy bulls, **3072**.
See also Genital System; Heredity, lethal factors; Reproduction.
SEX GLANDS. See Genital System, ovary testes.
SEX HORMONES.
General. Steroid hormones and water content of tissues, **206**; sex hormones and leucaemia, **1063**; effect of hypophysis, thyroid, sex steroids and adrenal cortex on granulation tissue, **1177**; causation and treatment of infertility, **1198**; ovarian hormones and calcium metabolism, **1437**; sex hormones and sexual cycle, **1866**; hormone therapy of sterility in cattle, **2430**; extraction of bovine urinary steroids, **3045**; a review, **3379**; and sex physiology, **3380**.
Androgens. Effect of testosterone propionate on sexual activity of male rabbits, **224**; testosterone propionate and sketetal development in the immature rabbit, **225**; effect of androgen on spermatogenesis, **567**; androgenic factor in cow manure, **1172**; urinary androgen excretion in cows, **1541**; ketosteroids in the amniotic fluid, **2169**; effect on spermatogenesis in birds, **2719**.
Gonadotrophins. A new pituitary gonadotrophic preparation, **1150-1152**; action of human chorionic gonadotrophin on adrenals and testicles of hypophysectomized immature rats, **1538**; enzymic inactivation of serum gonadotrophin, **2135**; inactivation and modification of serum gonadotrophin by periodate ions, **2424**; effect of chorionic gonadotrophin on transitory zone of the mouse adrenal, **3084**; mitogenic actions of testosterone propionate and of oestrone on the epidermis of the adult male mouse, **3359**; chorionic gonadotrophin, A.C.T.H. and adrenal—hyaluronidase relationship, **3744**.
Oestrogens. Effect of oestrogen on pituitary cytology and function, **226**; effect of diethylstilboestrol dipropionate on postpartum changes in the cow, **245**; renal tumours in male hamsters treated with oestrogen, **454**; potency and toxicity of synthetic oestrogens, **529** and **530**; thiouracil and response of pullets to oestrogen, **531**; oestrogen therapy and oestrous cycle in cows, **587**; use of oestrogens in gynaecology, **589**; toxicity of oestrogens in flesh of capons castrated with stilboestrol, **590**; oestrogenic properties of tulip bulbs, **591**; toxicity of oestrogen concentrates of sheep urine for mice, **825**; ovulation in the rabbit following oestrogen-progesterous treatment, **877**; prolapse and "pickout" in diethylstilboestrol treated cockerels, **1140**; oestrogen excretion by pregnant ewes, **1173**; particle size of oestrogen crystals and duration of oestrus, **1200**; placental changes in g. pigs following oestrogen treatment, **1537**; recovery from oestrogen-induced sterility in mice, **1539**; inactivation of oestrone by rats in relation to dietary effects on the liver, **1757**; action of stilboestrol on cupraemia, **1774**; growth stimulation in pigs by iodinated casein and stilboestrol, **1817**; modification of responses of pullets to oestrogen by dietary aureomycin, **2151**; attempts to modify the pathological picture produced in dogs by oestradiol benzoate, **2167**; effect of ovarian hormones upon uteriae pigmentation in vitamin E deficient oats, **2334**; induction of oestrus in ewes by synthetic oestrogens, **2419-2420**; synthetic oestrogens causing abortion in ewes, **2421**; excretion in the urine of non-pregnant ewes, **2422**; influence on the reticulo-endothelial system in g. pigs, **2423**; stilboestrol trial for earlier lambs, **2425**; potency of stilboestrol sulphate, oestrone and equilin, **2426**; effect of some synthetic steroids on the morphogenetic action of stilboestrol in the rat, **2427**; oral effectiveness of dimethyl ether of diethylstilboestrol and other steroid hormones on mammary glands of mice and rabbits, **2428**; effect of orally administered synthetic oestrogen on the male fowl, **2429**; effect on spermatogenesis in birds, **2719**; a synthetic water-soluble oestrogen, **3335**; mitogenic action of testosterone propionate and oestrone on the epidermis in male mice, **3359**; toxicity, **3381**; local action of oestradiol on bone, **3710**; effect of implantation of stilboestrol tablets combined with iodoprotein feeding on induced lactation in goats, **3088**; producing lactation in heifers, **3740**; use of synthetic and natural oestrogens in cows, **3741**; effect of oestrogen and progesterone on arterial system of the uterus in the cow, **3742**; caponization, **3751**.
See also Clover, Subterranean; Lactation; Progesterone; Rye Grass.
SHEARING. Shearing ewes before lambing, **3392**.
SHEEP.
General. Sexual season of the ewe and daylight environment, **1516**; aureomycin used in fattening of lambs, **1765**; book, genetics, **2220**; inheritance of skin wrinkling in sheep, **2432**.
See also Aircraft; Altitude; Behaviour of Animals; Blood, general chemical composition; diseases; Bone Marrow; Calcium; Digestive System, fauna and flora; Eggs, Mammalian; Embryos, mammalian; Heat Regulation; Jaws; Metabolism; Nutrition; Pancreas; Pregnancy, diagnosis; Sex Hormones; Shearing; Skin, general; Tailing; Thyroid Gland, iodinated proteins; Vitamins, vitamin A, vitamin B_1, vitamin B_2; Zootechny.
Arthropod Parasites. See Blowflies and Fleshflies; Insecticides; Lucilia; Melophagus; Sheep Scab.
Bacterial Diseases. See Agalactia, Contagious; Bacillus Anthracis Infection (Anthrax); Bacterium Coli; Brucella Abortus; Brucella Infection, in sheep; Brucella Tularensis Infection (Tularaemia); Clostridium Infection, in sheep; Corynebacterium Infection, in sheep; Erysipelothrix (Listeria) Monocytogenes Infection; Fusiformis Nodosus Infection (Foot Rot); Lymphadenitis, Caseous; Mycobacterium Johnei Infection; Pasteurella Infection, in sheep; Pfeifferella Whitmori Infection (Melioidosis); Salmonella Infection, in sheep; Streptococcus Infection, in lambs; Vibrio Fetus Infection.
Diseases, General. Sheep management and diseases, **1242**; infant lamb mortality, **1780**; "bent leg" in lambs, **1781**.
See also Books, diseases, general; Bracken; Carbon tetrachloride; Clover, Subterranean; Cobalt; Genital System, diseases, oestrous cycle, semen and spermatozoa, testes; Immunology, agglutination (haemagglutination); Insecticides; Ketosis; Nervous System, diseases; Poisons and Poisoning; Rickets; Sterility, in sheep; Streptomycin; Urinary System, diseases.
Fungous Diseases. See Ringworm.
Helminth Parasites. Trematode egg count in sheep faeces, **260**; survival on pasture of free-living stages of sheep nematodes, **1741**; seasonal variation in worm egg output in Scottish hill sheep, **1742**; phenothiazine against H. contortus in lambs, **1743-1744**.
See also Anthelmintics, for sheep; Carbon Tetrachoride; Dicrocoelium; Digestive System, diseases; Filariasis; Helminth Parasites; Lungworms; Ostertagia; Phenothiazine.
Protozoan Parasites. See Babesia Infection (Piroplasmosis) in sheep; Eimeria Infection (Coccidiosis), in sheep; Protozoa, General; Trypanosoma Simiae; Trypanosoma Vivax Infection.

SHEEP—[cont'd.]
Rickettsial Diseases. See Kerato-Conjunctivitis; Rickettsia Infection, Q fever; in sheep.
Virus Diseases. See Aujeszky's Disease; Bluetongue; Dermatitis, Ovine Contagious Pustular; Pox Diseases, sheep pox; Rift Valley Fever; Scrapie; Virus Abortion, Ovine.
SHEEP POX. See Pox Diseases, sheep pox.
SHEEP SCAB. Control in Germany, **114**; treatment with hexachlorcyclohexane preparations, **433**; latent phase and eradication, **2057**; in Eire, **3769**.
SHEEP TICK. See Melophagus; Ticks, Ixodidae.
SHELLFISH. See Food Hygiene, general.
SHIGELLA EQUIRULIS INFECTION. Endocarditis with pulmonary embolism in a horse associated with Shigella equirulis, **315**.
SHIGELLA FLEXNERI. Causing bacillary dysentery in laboratory monkeys, **2239** and **2240**.
SHIGELLA PARADYSENTARIAE. The toxic component of the somatic antigen of Sh. paradysenteriae, **1938**; cultural differentiation, **2504**.
SHOCK. Hydrops of foetus, a shock manifestation, **168**; role of adrenal cortex in adenosine triphosphate shock, **1521**; arterial perfusion of the liver in shock, **2117**; and allied forms of failure of circulation, **2990**.
See also Genital System, semen and spermatozoa; Immunology, anaphylaxis.
SHWARTZMAN PHENOMENON. Inhibition by nitrogen mustard and benzene, **3617**; factors involved in production of the local haemorrhagic necrosis, **3618**.
SIERRA LEONE. See Reports, Sierra Leone.
SIGMODON. See Cotton Rats.
SIKA NIPPON. See Deer.
SILAGE. See Nutrition.
SILICA GEL. See Technique and Apparatus, media.
SILICOSIS. B.C.G. in tuberculous silicosis, **1607**.
SILKWORM VIRUS. Experimental production under sterile conditions, **3256**.
SILVER. See Technique and Apparatus, staining.
SINGAPORE. See Brucella Infection, in cattle.
SINUSITIS, INFECTIOUS, OF TURKEYS. Treatment with aureomycin and streptomycin, **93**; experimental transmission of infectious sinusitis of turkeys, **1021**; in Uruguay, **3246**; immunological and serological studies in turkeys, **3597**.
SIPHONA. Evaluation of insecticides in L. irritaus control, **2303**; in Australia, **3412**.
SK-9. See Parasiticides, General.
SKIN.
General. Sunburn, **194**; sunlight reflection (albedo) of the skin in Swiss Brown cattle, **251**; carcinogens from skin fats, **457**; effect of androgen on skin and sebaceous glands of hamsters, **541**; perinuclear sudanophil bodies in epidermis, **542**; spread of pigment and immunity reactions, **785**; skin changes after johnin test, **935**; skin sensitivity to cetrimide (C.T.A.B.), **1125**; toxicity test of D.D.T. when applied to the skin, **1475**; local action of adrenocortical steroids on skin, **1499**; pH of normal and diseased skin, **2104**; the adrenal cortex and its relation to skin pigmentation, **2153**; inheritance of skin wrinkling in sheep, **2432**; factors concerned in intracutaneous injection of cattle, **2691**; competition between skin follicles in sheep, **3340**; effect of testosterone propionate and oestrone on the epidermis of adult male mice, **3359**; abnormalities of keratinization in the skin of sheep, **3683**; functional activity of sweat glands in the hairy skin of the dog, **3708**; thickness of the skin in dogs, **3709**.
See also Immunology, allergy; Immunology, antibodies; Mycobacterium Tuberculosis Infection, tuberculin test; Neoplasms, causation.
Diseases. Histopathology of skin, **281**; antihistamines in allergic and non-allergic dermatoses, **818**; occupational skin affections due to streptomycin, **1124**; skin lesions in rinderpest, **1363**; dermatitis in cattle associated with Rhabditis, **1411**; relation of feed to an outbreak of hyperkeratosis in calves, **2089**; pH of normal and diseased skin, **2104**; in pigs and cattle in Sierra Loene, **2201**; filarial dermatosis in sheep, **3282**.
See also Actinomyces Infection; Epidermoptes; Fungi; Immunology, allergy; Lupus; Mycobacterium Tuberculosis Infection, in cattle; Neoplasms; Pemphigus.
SLAUGHTER. Humane slaughter, **2177**.
See also Abattoirs; Stunning.
SLEEPING SICKNESS. See Trypanosoma Infection, in man.
SMALLPOX. See Pox Diseases, smallpox.
SMOG. Smog in Donora, Pa., **236**.
SNAILS. Planorbis kahuika, a possible intermediate host of cattle paramphistomes in N. Zealand, **115**; molluscacides against A. glabratus in endemic areas of schistomiasis in Puerto Rico, **436**; snail hosts of liver fluke in Britain, **762**; B. similaris and C. ravida sieboldtiana, as hosts of E. pancreaticum, **2933**; Katayama spp., Oncomelania spp. and Schistosomophora spp. as Schistosoma hosts in the Pacific, **3269**.
SNAKE VENOMS. Neutralization of pit viper (Agkistrodon piscivorus) venom by king snake (Lampropeltis getulus) serum, **2115**; snakes and antivenins, **3326**.
S.N.P. See Parasiticides.
"SNUFFLES." Control in pigs, **1465**.
SODIUM. Sodium, chlorine and potassium requirements of growing pigs, **1075**.
See also Cation-Exchange Resin.
SODIUM BICARBONATE. See Tetany.
SODIUM CHLORATE. See Poisons and Poisoning.
SODIUM CHLORIDE. Content of serum and cerebrospinal fluid in the horse, **3345**; relation of sodium chloride depletion to urine excretion and water intoxication, **3670**.
SODIUM FLUORIDE. See Anthelmintics, for pigs.
SODIUM FLUOROACETATE. See Vermin Control.
SODIUM GENTISATE. Salicylate, gentisate and circulating oesinophils, **3044**.
SODIUM SALICYLATE. In treatment of joint-ill, **944**; salicylate, gentisate and circulating eosinophils, **3044**.
SOIL. Tsetse fly problems and soil conservation in the Belgian Congo, **107**; cattle health and soil, **1529**; Cl. botulinum in soils of New York State, **1643**.
See also Disinfectants, Antiseptics and Sterlization; Bacillus Anthracis Infection (Anthrax).
SOLANUM. See Poisons and Poisoning, plant poisoning.
SOLEY'S DISEASE. In Australia, **3412**.
SOLOMON ISLANDS. See Lice.
SORGHUM. See Nutrition, in cattle.
SOUTHERN RHODESIA. See Poisons and Poisoning, plant poisoning.
SOYA BEANS. Soya bean meal and resistance of chicks to ascarids, **472**; sterility in rabbits associated with soybean hay feeding, **1432**.
SPAIN. See Clostridium Botulinum Intoxication [Botulism]; Newcastle Disease; Trichomonas Infection, in cattle.
SPARGANUM. Species of Sparganum in Venezuela, **1409**.
SPASMOPHILIA. In dogs, associated with streptococci, coccidia, Toxocara spp. and Ancylostoma, **2097**.
See also Agene; Tetany.
SPERMATOLYSIS. See Sterility.
SPERMATOZOA. See Genital System, semen and spermatozoa.
SPAYING. See Castration.
SPHINGOMYELINS. Behaviour in the animal body, **2398**; splitting by organs, **2399**.
SPICARIA. S. divaricata spores for testing air-borne contamination from animal houses, **2980**.
SPIDERS. Residual toxicity of chemicals for Latrodectus mactans, **428**.
SPIRILLUM INFECTION. S. minus infection (rat-bite fever) in Kenya, **986**.
SPIROCERCA INFECTION. Treatment with caricide, **2067**; haematology of dogs with S. sanguinoleuta, **2140**; S. lupi in a dog, **2635**; S. lupi in a silver fox, **2636**.
SPIROCHAETES. In fowls in Sierra Leone, **2201**; a review, **2532**; in Cyprus, **3766**.
See also Bacteria, General; Leptospira; Treponema Pallidum Infection (Syphilis).
SPLANCHNOPLEUR. See Genital System, placenta.
SPLEEN. Ovary-spleen transplantation in rats and effect of castration and pregnancy, **467**; changes in the spleen of horses caused by old age, **1825**; action on the fibrinolysin-antifibrinolysin system in serum, **2393**; effect of aureomycin and flavonoid rutin on the splenectomized rat, **3330**.
See also Streptococcus Infection, in cattle.
SPOROTRICHUM INFECTION. In horses in Indo-China, **2858**; growth of S. schenkii on embryonated eggs, **2861**.
SPUTUM. See Brucella Suis; Coccidioides Infection; Mycobacterium Tuberculosis, general, cultivation.
SQUIRRELS. A septicaemia resulting from bite of Xerus erythropus, a West African squirrel, **1968**.
STABLES. See Hygiene.
STAINING. See Technique and Apparatus, staining.
STAPHYLOCOAGULASE. See Staphylococci.
STAPHYLOCOCCI. Taxonomy and methods of isolation, **1**; biology of staphylococci, **293**; staphylocoagulase in blood coagulation, **551**; coagulase test in the study of food poisoning staphylococci, **1577**; staphylococcus anatoxin tests, **1905**; distribution of haemolysins, **2221**; staphylococcal delta-haemolysin, **2222**; differentiation of pathogenicity of staphylococci by the coagulase test, **2468**; rapid method for demonstrating action of Staphylococcus enterotoxin upon Rana pipiens, **3102**; incidence of penicillin- and streptomycin-resistant strains in a hospital, **3132**; significance of resistance to penicillin, streptomycin, aureomycin, chloramphenicol and terramycin, **3133**.
STAPHYLOCOCCUS AUREUS. Staph. aureus food poisoning in Khartoum, **230**; injections with Staph. aureus against fowl (Rous) sarcoma, **787**; morphological characteristics of sulphonamide resistant and susceptible strains, **909**; sensitivity to penicillin, **2479**; from pork sausage, causing food poisoning in man, **3064**; effect of cortisone on infected g. pigs, **3333**.
STAPHYLOCOCCUS ENTEROTOXICUS. In canned mackerel, **3061**.

STAPHYLOCOCCUS INFECTION. Staphylococcal infections in dairy goats, **294**; penicillin sensitivity of staphylococci in relation to clinical manifestations of infection, **1906**; enzootic staphylococcal infection in lambs associated with tick-bite, **2467**.
See also Food Hygiene, food poisoning (in man); Mastitis, staphylococcal infection.
STAPHYLOCOCCUS PYOGENES. Effect of aureomycin in the bovine udder, **295**.
STEATOSIS. See Cholesterol.
STEPHANURUS. Occurrence of the swine kidney worm S. dentatus in Natal, **1746**; in St. Kitts-Nevis, **2198**; in French Guiana, **2463**; occurrence of S. dentatus in swine, in Surinam, **2946**; in Australia, **3412**.
STERILITY.
General. Causation and treatment of sterility, **1198**; sterility in rabbits associated with soybean hay feeding, **1432**; recovery from oestrogen-induced sterility in albino mice, **1539**; spermatolysis, a cause of male sterility, **1540**.
See also Fertility; Genital System, general; semen and spermatozoa.
In Cattle. Sterility control in cattle and artificial insemination, **248**; sterility in bulls, **593**; sterility in cows in Brazil, **594**; artificial insemination for control of sterility, venereal diseases and testing of bulls, **1192**; control of sterility resulting from nutritional deficiencies, **1199**; delayed breeding and fertility of beef heifers, **1542**; hormone therapy in cattle, **2430**; herd sterility in cattle, **3382**.
See also Genital System, semen and spermatozoa; Trichomonas Infection, in cattle; Vibrio Fetus Infection.
In Horses. Barren mares, **247**; haematology of barren mares, **2138**.
In Sheep. In New Zealand, **3110**; in Australia, **3413**.
In Swine. Reproductive disorders in swine, **2431**.
STERILIZATION. See Disinfectants, Antiseptics and Sterilization; Surgery.
STEROIDS. See Sex Hormones.
STICKER'S SARCOMA. See Neoplasms.
STILBAMIDINE. See Trypanosoma Infection, in cattle.
STILBOESTROL. See Growth; Sex Hormones, oestrogens.
STILESIA. In camels, **3625**.
ST. KITTS-NEVIS. See Reports, St. Kitts-Nevis.
STOMACH. See Digestive System, stomach.
STOMACH WORMS. See Haemonchus; Ostertagia.
STOMATITIS, VESICULAR. In British Honduras, **2776**; quantitative study of the virus, **2889**; human infection, **2890**.
STOMOXYS. In transmission of tularaemia in Turkey, **2523**; transmitting swine erysipelas, **3472-3473**.
STRAIN 19. See Brucella Infection, immunology.
STRAIN 45/20. Brucella Infection, immunology.
STRANGLES. See Streptococcus Equi Infection.
STREPTOBACILLUS MONILIFORMIS. See Actinomyces Muris-Ratti Infection.
STREPTOCOCCI.
General. Pathogenicity for mice of group B, **5**; new "group O", **6**; crystallization and serological differentiation of streptococcal proteinase, **681**; antibiotics produced by micrococci and streptococci, **915**; type five sulphadiazine-resistant haemolytic Streptococcus, **1251**; acquired immunity in rabbits to group A type 30 haemolytic Streptococcus, **1395**; nuclease production by streptococci, **1655**; penicillin and streptomycin sensitivity of enterococci and streptococci of the viridans group, **1815**; β-haemolytic streptococci isolated from dogs, **1909**; serological identity of a yellow-pigmented Streptococcus, **1912**; serological identity of groups L and N, **1913**; associated with spasmophilia and canine hysteria, **2097**; hyaluronidase production, **2223**; beta-haemolytic streptococci of group C, isolated from animals, **2469**; role of group G and group I streptococci in mastitis, **2470**; infection with Group-N streptococci in cattle, **2471**; serological group differentiation of mastitis streptococci, **2472**; studies on haemolytic streptococci in pyogenic processes, **2810**; alpha type streptococci causing arthritis in laboratory rodents, **3440**; studies on non-haemolytic streptococci, **3441**; elaboration of desoxyribonuclease by streptococci, **3518**.
See also Streptolysin.
Enterococci. Penicillin and streptomycin sensitivity, **1815**; in vitro effect of combined penicillin, streptomycin or chloromycetin, **3015**.
Micrococci. Producing antibiotics, **915**.
Pneumococci. Pneumococcus Type II infection in laboratory rats, **1581**; demonstration of agglutinins after intraperitoneal injection of Pneumococcus Type I in g. pigs, **1914**.
STREPTOCOCCUS AGALACTIAE. Action of sulphanilamide and penicillin on Str. agalactiae in milk, **635**; control of Str. agalactiae mastitis, **911**; bactericidal effect of disinfectants on Str. agalactiae, **1247**; recovery of Str. agalactiae from outside the bovine udder, **1578**; sulphanilamide treatment of Str. agalactiae infection in a herd, **2475**; use of penicillin and sulphone in the eradication of Str. agalactiae infection, **2476**; control of Str. agalactiae infection in herds by means of therapeutic treatment, **2477**; sensitivity to penicillin, **2479**.
See also Streptococcus Infection, in goats.
STREPTOCOCCUS ARONSON. Chemotherapy and penicillin therapy of Str. aronson infection in mice, **1910**.
STREPTOCOCCUS DYSGALACTIAE. Sensitivity to penicillin, **2479**.
STREPTOCOCCUS EQUI INFECTION [STRANGLES]. In Denmark, **2459**; in Norway, **3770**; in Sweden, **3772**.
STREPTOCOCCUS INFECTION.
General. Experimental endocarditis in rats, **917**.
In Cattle. Str. pneumoniae in calves, **2**; "Rubber spleen" in calves caused by Str. pneumoniae, **3**; endocarditis, **4**; pathogenicity for mice of group B streptococci from cattle, **5**; infection with Group-N streptococci in cattle, **2471**.
See also Mastitis, Bovine, streptococcal infection.
In Horses. See Streptococcus Equi Infection.
In Goats. Experimental Str. agalactiae mastitis in goats, **633** and **634**.
In Sheep. Endocarditis in lambs, **296**.
In Swine. Streptococcal diseases in swine, **1580**; puerperal septicaemia in sows, **3479**.
STREPTOCOCCUS PNEUMONIAE. See Streptococcus Infection, in cattle.
STREPTOCOCCUS SALIVARIUS. Studies on non-haemolytic streptococci, **3441**.
STREPTOCOCCUS UBERIS. Sensitivity to penicillin, **2479**.
STREPTOCOCCUS ZOOEPIDEMICUS. Behaviour of aerosols of Str. zooepidemicus, **916**; Str. zooepidemicus septicaemia in g. pigs, **1911**.
STREPTODORNASE. Enzymatic degradation of desoxyribonucleic acid in purulent exudates by streptodornase, **3714**.
STREPTOLYSIN. Purification and properties of streptolysin S, **830**; formation of streptolysin O by a group A haemolytic streptococcus, **1656**; association of lipoproteins with the inhibition of streptolysin S by serum, **3619**.
STREPTOMYCES. Phages affecting Str. griseus, **1387**; Str. galtieri, isolated from a case of actinomycosis in a dog, **3506**.
STREPTOMYCIN. Sensitivity of tubercle bacilli in vitro, **16**; in infectious sinusitis of turkeys, **93**; laboratory aspects of streptomycin, **195**; against bacterial contamination of viruses of Newcastle disease and infectious bronchitis, **390**; nature and practical application of, **518**; agglutination of bacteria by streptomycin, **829**; occupational skin affections, **1124**; serum levels in horses and sheep, **1133**; effects of dihydrostreptomycin—para-aminosalicylate on TB. in g. pigs, **1263**; streptomycin and tuberculin in the treatment of TB. in g. pigs, **1599**; adjuvants to streptomycin in treatment of tuberculous meningitis, **1600**; effect on M. johnei in vitro, **1609**; sensitivty of enterococci and streptococci of the viridans group, **1815**; fertility of diluted bull semen containing streptomycin, **1862**; primary streptomycin-resistant TB. in the newborn child, **1923**; effect of cortisone on development of TB. in g. pigs and treatment with streptomycin, **2232**; for treatment of glanders, **2236**; treatment of glanders in man, **2237**; intrauterine treatment of vibrionic sterility, **2248**; failure to enhance infectivity of H. capsulatum in mice, **2250**; in complications of distemper, **2287**; causing weight increase of pigs, **2319**; concentration in milk following insertion of bougies into the udder, **2482**; in veterinary medicine, **3014**; combined action of penicillin, streptomycin or chloromycetin or enterococci in vitro, **3015**; concentration in brain and other tissues of cats after intoxication, **3329**; effect on bull semen, **3735**; toxicity to bull spermatozoa, **3736**.
See also Brucella Infection, treatment and control; Insemination, Artificial; Mycobacterium Johnei Infection, (Johne's Disease); Mycobacterium Tuberculosis, resistance to drugs ; Mycobacterium Tuberculosis Infection, treatment; Rabies, general; Staphylococci.
STREPTOTHRIX. See Actinomyces Infection.
STRESS. "Brown fat" tissue and alarm reaction in rats, **212**; participation of the reticulo-endothelial system in alarm reaction, **538**; ascorbic acid content of the pituitary in relation to stress and adrenalectomy, **2154**; the physiology and pathology of exposure to stress, **3115**.
STRONGYLES. Significance of haemoglobin in Nippostrongylus muris, Haemonchus contortus and Nematodirus spp., **121**; fertility of strongyle eggs from phenothiazine treated horses, **439**; treatment of horse strongylosis with "reconox", **440**; treatment of "bloodworms" (S. vulgaris) in horses, **441**; resistance of sheep to H. contortus and Trichostrongylus, **1048**; life cycle of Strongylus (Delafondia) vulgaris in horses, **1412**; gastro-intestinal strongylosis in cattle, **2061**; in St. Kitts-Nevis, **2198**; control in horses by phenothiazine, **2628**; occurrence of Setaria cervi in cattle, Stephanurus dentatus and Metastrongylus in swine in Surinam, **2946**; screening tests

STRONGYLES—[cont'd.]
of organometallic and other heavy compounds on horse strongyle larvae in manure, **3640**.
See also Angiostrongylus; Bunostomum; Chabertia; Cooperia; Haemonchus Leptostrongylus; Metastrongylus; Muellerius; Nematodirus; Nippostrongylus; Ostertagia; Protostrongylus; Stephanurus; Syngamus; Trichostrongylus.
STRONGYLOIDES. Caricide treatment of strongyloidiasis in dogs, **2065**; S. stercoralis infection in dogs, **2940**; epidemiology in domestic and fur-bearing animals, **3272**.
STRONTIUM. Effect of strontium chloride feeding on rat molars and their supporting tissues, **2967**.
STRYCHNINE. Residual arsenic and strychnine in tissues of treated cattle, **2996**.
STUNNING. Electrical stunning, **884**; humane slaughter, **2177**.
SUBTILIN. Effect on growth of M. tuberculosis in vitro, **1264**.
SUBULURA. S. differens in fowls in Turkey, **2947**.
SUCCINIC ACID. Decarboxylation by washed suspensions of rumen bacteria, **2141**.
SUCKING LICE. See Lice.
SUDAN STAIN. See Technique and Apparatus, staining.
SUGAR. Conversion of certain soluble sugars to a glucosan by holotrich ciliates in ovine rumen, **2384**; inactivation of autolysin of meningococci by suspension in saccharose and immunological properties of the suspension, **2605**.
See also Blood, chemical composition; Nutrition, general.
SUGAR BEET. Diarrhoea in catte caused by sugar beet leaves, **1449**; effect of 2, 4 dichlorophenoxyacetic acid on potassium nitrate levels in sugar beet leaves, **1472**.
SULPHADIAZINE. See Sulphonamides, sulphadiazine.
SULPHAGUANIDINE. See Sulphonamides, sulphaguanidine.
SULPHAMERAZINE. See Sulphonamides, sulphamerazine.
SULPHAMETHAZINE. See Sulphonamides, sulphamethazine.
SULPHAMEZATHINE. See Sulphonamides, sulphamethazine.
SULPHANILAMIDE. See Sulphonamides, sulphanilamide.
SULPHAQUINOXALINE. See Sulphonamides, sulphaquinoxaline.
SULPHATHALIDINE. See Sulphonamides, sulphathiazole.
SULPHATHIAZOLE. See Sulphonamides, sulphathiazole.
SULPHONAMIDES.
General. Sulphonamides and phenothiazine in histomoniasis and coccidiosis of turkeys, **65**; blood and milk levels produced by sulphonamides, **196**; sulphonamides and aneurin economy, **213**; potentiation of sulphonamide by "L-substance", **523**; in the treatment of coccidiosis, **700**; morphological characteristics of sulphonamide resistant and susceptible strains of Staph. aurens, **909**; mode of action of marbadal, **1135**; sulphonamide treatment of enteritis-pneumonia syndrome in swine, **1136**; book, sulphonamides, **1244**; in vitro activity of nisulphazole compared with that of other sulphonamides, **1489**; in vitro action on Trichomonas, **1665**; as factors increasing susceptibility of A. aegypti to Pl. gallinaceum, **2049**; in vitro resistance of Bact. coli, **2238**; injury to the urinary tract after sulphonamide therapy, **2365**; against duck diseases, **2503**; treatment of avian pasteurellosis and salmonellosis, **2840**; combined penicillin and sulphonamide for local wound treatment in dogs, **2989**; for treatment of trichinized white mice, **3274**.
See also Brucella Infection, treatment and control; Eimeria Infection (Coccidiosis), treatment; Rickettsia Infection, in dogs.
Nisulphazole. In vitro activity of nisulphazole compared with that of other sulphonamides, **1489**.
Sulphadiazine. In experimental brucellosis, **41**; effect on S. pullorum, **953**; sulphadiazine-resistant haemolytic Streptococcus, **1251**; binding of blood serum gamma globulin by sulphadiazine, **1487**; and survival of the mammalian embryo, **3331**; for treatment of experimental brucellosis in swine, **3494**.
Sulphaguanidine. Sulphaguanidine and sodium salicylate in joint-ill, **944**; effect on reproduction, **858**.
Sulphamerazine. In histomoniasis and coccidiosis of turkeys, **165**; blood concentration following sulphamerazine and sulphamethazine administration in cattle, **197**; effect on S. pullorum, **655**; and sulphathalidine (phthalylsulphathiazole) for enteritis-pneumonia syndrome in pigs, **1136**; treatment of calf pneumonia, **2500**; effect on pullorum reactions, **3166**.
See also Eimeria Infection (coccidiosis), treatment.
Sulphamethazine. Blood levels in cattle, **197**; in the treatment of enterotoxaemia in goats, **324**; in experimental coccidiosis in chicks, **350**; and blood transfusion in bovine brucellosis, **963**; in calf diphtheria, **1646**; in treatment of pneumonia in swine, **1959**; treatment of calf pneumonia, **2500**; use in fowl typhoid of turkeys, **3484**; treatment of quail ulcerative enteritis, **3598**.
See also Eimeria Infection (Coccidiosis), treatment.
Sulphanilamide. Control of bacteria in bovine semen extenders with sulphanilamide, polymyxin and aureomycin, **240**; fertility of bovine semen containing sulphanilamide and antibiotics, **241**; action of Str. agalactiae in milk, **635**; penicillin and sulphanilamide in semen diluents, **875**; bull semen extenders containing sulphanilamide and antibiotics for control of bacteria, **1194**; treatment of Str. agalactiae infection in a herd, **2475**.
See also Digestive System, fauna and flora.
Sulphaquinoxaline. In treatment of histomoniasis and coccidiosis of turkeys, **65**; in experimental coccidiosis in chicks, **350**; for control of poultry coccidiosis, **699**; absorption, distribution and excretion in poultry, **1137**; in prophylaxis of experimental E. necatrix coccidiosis, **2262**; use in fowl typhoid of turkeys, **3484**; treatment of quail ulcerative enteritis, **3598**.
See also Eimeria Infection (coccidiosis), treatment.
Sulphathalidine. See Sulphathiazole.
Sulphathiazole. Causing kidney disease in calf, **198**; for purification of cow pox vaccine, **364**; sulphamerazine and sulphathalidine (phthalylsulphathiazole) for enteritis-pneumonia syndrome in swine, **1136**; in the prevention and treatment of scours in calves, **2352**.
SULPHETRONE. See Sulphones.
SULPHONES. Sulphone and penicillin separately and combined in streptococcal mastitis, **297**; penicillin preparations and sulphone singly or combined for staphylococcal mastitis, **910**; in the eradication of Str. agalactiae infection, **2476**; treatment of TB. with sulphetrone, **3143**; chemotherapy of TB. with sulphetrone, **3144**.
SULPHUR. See Radioactive Isotopes.
SUMMER MASTITIS. See Corynebacterium Infection, in cattle.
SUNBURN. Protection of skin against sunburn, **194**.
SURAMIN. See Naganol.
SURFACE-ACTIVE AGENTS. Bactericidal effect on tubercle bacilli, **2233**; effect of wetting agents on growth of tubercle bacilli, **3151**; hyperlipaemia in rabbits caused by intravenously injected surface-active agents, **3692**; effect of intravenous surface-active agents on experimental atherosclerosis in rabbits, **3693**.
See also Detergents; "Tween 80".
SURGERY. Ovarian transplantation in dogs, **243**; ruminal fistula, **267**; instrument for surgical treatment of teat obstruction, **617**; causation and treatment of infertilty, **1198**; collaboration in human and veterinary surgery, **1221**; stomach surgery in dogs, **1466**; effect of A.C.T.H. and surgical operations on iodine excretion, **1850**; changes in blood chemistry after surgical operations, **2137**; grafting of oesophagus in dogs, **2196**; removal of foreign bodies from ruminant stomach, **3315**; intra-ocular graft in ovary in pregnancy diagnosis, **3377**; cystic glandular hyperplasia after sterilization by ligation of the cornua in a bitch, **3394**; thoracic surgery in small animals, **3705**.
See also Books, surgery; Caesarian Section; Caponization; Castration; Docking; Parabiosis.
SURINAM. See Strongyles.
SURRA. See Trypanosoma Evansi Infection.
SWAZILAND. See Reports, Swaziland.
SWEATING. Excretion of water, **537**; sweat and adrenal function, **861**; panting in cattle and dry coat in horses, **1097** and **1099**; value of sweat glands for heat resistance in cattle, **2697**; the sweat glands of Ayrshire cattle, **3338**; functional activity of sweat glands in the hairy skin of the dog, **3708**.
See also Temperature.
SWEDEN. See Actinomyces Muris-Ratti Infection; Cobalt; Erysipelothrix Rhusiopathiae Infection, immunology; Lice; Mycobacterium Tuberculosis Infection, human infection; Newcastle Disease, general; Reports, Sweden.
"SWIMMERS' ITCH." Caused by schistosome cercariae, **3411**.
SWINE.
General. Pig production, **256**.
See also Anaesthesia; Blood, corpuscles (red); Calcium; Digestive System, flora and fauna; Ear; Food Hygiene, meat inspection; Genital System; Growth; Heredity, general; Insemination, Artificial, in swine; Metabolism; Milk and Milk Products, chemical composition; Milk and Milk Products, colostrum; Nutrition, swine; Temperature, environmental; Vitamins, vitamin E, vitamin B complex, vitamin B_1, vitamin B_6, vitamin B_{12}; Wild Pigs.
Arthropod Parasites. See Mange, in swine.
Bacterial Diseases. Sulphonamide treatment of enteritis-pneumonia syndrome, **1136**.
See also Brucella Infection; Corynebacterium Infection; Dysentery, Swine; Erysipelothrix Infection; Fusiformis Nodosus Infection (Foot Rot); Leptospira Infection; Mycobacterium Tuberculosis Infection.
Diseases, General. Diseases of piglets, **490**; use of cortisone and A.C.T.H. in rheumatoid disease in swine, **1149**; some pig diseases, **1464**; book, mortality in young pigs, **1571**; passage of rinderpest virus in pigs, **2015**; piglet mortality in Bavaria, **2094**; observations on some pig diseases, **2353**.

SWINE—Diseases, General—[cont'd.]
See also Immunology, anaphylaxis, haemolytic disease; Liver, diseases; Manganese; Oedema Disease, Of Swine; Periarteritis Nodosa; Poisons and Poisoning, plant poisoning; Rhinitis, Infectious Atrophic; Rinderpest; "Snuffles"; Sterility; Syncope, Fatal in Pigs.
Helminth Parasites. See Anthelmintics, for pigs; Ascarids; Helminth Parasites; Stephanurus.
Protozoan Diseases. See Eimeria Infection [Coccidiosis]; Eperythrozoon Infection.
Virus Diseases. A new form of paralysis, **2021**; icteroanaemia, eperythrozoonosis, or anaplasmosis-like disease of swine produced by a filtrable virus, **2905**; a disease closely resembling Teschen disease, **3230**.
See also Aujeszky's Disease; Broncho-Pneumonia, Enzootic, in piglets; Encephalomyelitis, Porcine; Encephalitis, Japanese B; Foot and Mouth Disease, virus; Influenza; Pox Diseases, swine pox; Rhinitis, Infectious Atrophic; Rinderpest; Swine Fever; Viruses, neurotropic.
SWINE ERYSIPELAS. See Erysipelothrix Rhusiopathiae Infection [Swine Erysipelas].
SWINE FEVER.
General. In Trinidad and Tobago, **1232-1234**; sub-clinical infection, **2019**; in Yugoslavia, **2205**; in the Netherlands, **2458**; in Germany, **2460**; in Malta, **3414**; diagnosis, **3567**; variants of virus, **3568**; in Norway, **3770-3771**.
Immunology. Crystal violet vaccine and serum in the prevention, **1364**; preparation and use of crystal violet vaccine, **2020**; passage of virus in rabbits, **2286**; active immunization, **2904**; possible transmission of TB. by crystal violet vaccine, **3229**; immunity tests of crystal violet vaccine, **3569**.
SWINEHERD'S DISEASE. See Leptospira Infection, in man from animals.
SWINE INFLUENZA. See Influenza, in swine.
SWINE PLAGUE. See Pasteurella Infection, in swine.
SWINE POX. See Pox Diseases, swine pox.
SWITZERLAND. See Eyes, diseases; F. & M. Disease, immunology; Mastitis, Bovine, treatment and control; Pasteurella Pseudotuberculosis; Rickettsia Infection, Q fever.
SYLVICAPRA. See Antelopes.
SYMBIOSIS. See Strongyles.
SYNCOPE, FATAL, IN PIGS. Aetiology, **2660**; attempts to produce fatal syncope by feeding zinc, **2662**; prophylaxis, **2985**.
SYNGAMUS. Treatment and prevention, **767**; S. trachea in pheasants in Czechoslovakia, **1050**; occurrence of S. trachea in Natal, **2631**.
SYPHILIS. See Treponema Pallidum Infection [Syphilis].

T

T-1824. See Technique and Appartus, haematological.
TABANUS. A law case on poisoning of horses with a tabanid repellent, **2107**.
TACHYCARDIA. See Circulatory System, diseases.
TAENIA HYAENEA. See Cysticercus.
TAENIA SAGINATA. Action of areca nut and Filix mas extracts, **2626**.
TAENIA SOLIUM. Action of areca nut and Filix mas extracts, **2626**.
TAENIA TAENIAEFORMIS. Action of areca nut and Filix mas extracts, **2626**.
TAHITI. See Filariasis.
TAILING. See Docking.
TAIL-SWITCH LOUSE. See Lice; Reports, East Africa.
TANGANYIKA. See Reports, East Africa; Rinderpest, immunology.
TANNERIES. See Bacillus Anthracis Infection [Anthrax].
TANNIC ACID. See Immunology, agglutination (haemagglutination).
TAPEWORMS. See Cestodes.
TASMANIA. See Services, Vieterinary, Australia.
T.D.E. See Insecticides.
TEAT. The treatment of teat obstruction, **617**; anatomy and pathology of the bovine teat, **812**; wall structure and closing mechanism of the bovine teat, **1831**.
See also Mammary Gland; Udder.
TECHNIQUE AND APPARATUS.
General. A ruminal fistula and cannula for cattle, **268**; filtering action of gauze masks, **335**; aircraft disinsectization, **426**; intra-ocular transplantation of heterologous tissues, **468**; iron absorption test, **474**; use of artificial kidney, **562**; instrument for surgical treatment of teat obstruction, **617**; heart rate control with intracardiac thermode, **1217**; blood perfusion of isolated organs by special apparatus, **1218**; artificial kidney, **1219**; external hysterography in the study of uterine activity, **1511**; test for antioxidant activity by stabilization of vitamin A and carotene, **1555**; method of estimating the resistance during obstruction of an artery to a limb, **1840**; isolation of ova from living cows, **1865**; measurement of total body water by duterium oxide dilution, **2132**; rapid measurement of intrarenal and other tissue pressures, **2148**; measurement of analgesia in animals, **2194**; a method of injecting insects with minute doses of insecticides, **2301**; microspectrophotometric study of red cell nuclei during pyknosis, **2358**; use of p-nitrophenylphosphate as substrate in milk phosphatase tests, **2407**; electrical measurement of bull semen activity, **2413**; preservation of yeasts and fungi by desiccation, **2444**; "strip-coating" technique, **2451**; factors concerned in intracutaneous injection of cattle, **2691**; distribution of blood vessels and bile ducts in the bovine liver as revealed by the vinylite-corrosion technique, **2720**; a model for demonstration of the mechanics of rumination and vomiting, **2758**; ester hydrolysis and extraction of bovine urinary steriods, **3045**; measurement of thickness of various parts of histological sections, **3095**; a simple technique for study of vascular pattern, **3098**; a lucite syringe shield for protection against irradiation during intravenous administration of radioisotopes, **3099**; use of controls in medical research, **3107**; a new microculture slide, **3404**; apparatus for preparing ultrafiltrates, **3405**; teaching the art of research, **3406**; a two-needle syringe for the tuberculin test, **3760**; a syringe service, **3763-3764**.
See also Antibiotics; Blood, pressure, volume; Books, anatomy, medicine, surgery; Carbohydrates; Chromatography; Electrocardiography; Feulgen Reaction; Food Hygiene, meat inspection; Freeze-Drying; Genital System, semen and spermatozoa; Insemination, Artificial; Miostagmin Reaction; Metabolism; Oscillography; Photokymography; Pregnancy, diagnosis;
Bacteriological. Ultraviolet light and fluorescent dyes in bacterial counting, **600**; urease test for differentiation of Br. suis, **664**; a simple method of lyophilizing micro-organisms, **887**; examination of bovine faeces for acid-fast bacilli, **888**; bacterial production and destruction of histamine in vitro, **989**; improved technique for demonstration of tubercle bacilli, **1208**; acid fast bacilli in hen egg media, **1209**; use of trisodium phosphate for isolation of M. tuberculosis, **1210**; differentiation of Proteus from other enteric organisms, **1211**; coagulase test in the study of food poisoning staphylococci, **1577**; methods of recovery of Str. agalactae from outside the bovine udder, **1578**; use of chick embryo for isolation of Brucella, **1634**; a direct culture method for examination of milk samples, **1872**; methods for the study of bacteria and pleuro-pneumonia-like organisms, **1874**; a menstruum for drying bacteria and viruses, **1876**; pipetting devices used in bacteriology, **1877**; rapid abnormality indicator for milk, **2182**; inhibition of a strain of Br. abortus by medium filtered through cotton, **2245**; preservation of microbial preparations with a cellulose acetate varnish, **2441**; photographic examination of giant colonies, **2446**; inclusion bodies in bacteria under the electron microscope, **2539**; new technique for the study of growing micro-organisms, **3091**; culture flask for estimation of growth of micro-organisms by optical methods, **3092**; rapid method for demonstrating action of Staphylococcus enterotoxin upon Rana pipiens, **3102**; testing of virulence of acid-fast bacilli, **3149**.
See also Bacteria, General; Food Hygiene; Freeze Drying; Milk and Milk Products, bacterial content; Mycobacterium Tuberculosis, general, cultivation; Technique and Apparatus, media, staining.
Collection of body fluids, excretions and tissues. The rate of blood flow through needles under pressure, **202**; collection of bone marrow from iliac crest, **266**; collection of arterial blood, **268**; sampling by needle biopsy in diffuse liver disease, **1111**; methods and equipment used in separation of urine from faeces in cattle, **1870**; collection and examination of cerebrospinal fluid in cattle, **2189**; aspiration biopsy of liver of cattle, **2190**; marrow biopsy in normal sheep, **2191**; Wall's liver biopsy for horses, **3312**; endometrial biopsy in sterility, **3383**.
See also Blood, transfusion; Genital System, semen and spermatozoa; Insemination, artificial.
Haematological. Carotid loops for collection of arterial blood, **268**; method for counting rabbit blood platelets, **607**; determination of blood volume, **608**; quantitative determination of bilirubin, **609**; making autoradiographs from individual blood cells, **610**; a simple halometer, **892**; apparatus for counting red cells, **893**; method for measuring diameter of erythrocytes, **1504**; collection of leucocytes from circulating blood, **1882**; method used for assessment of englobulin content of serum, **1884**; apparatus for measuring blood pressure, **2193**; measuring of plasma volume using a dye T-1824, **2392**; blood sedimentation test and calcium therapy, **3018**.
See also Blood; Freezing.
Helminthological. Trematode eggs counting method in sheep faeces, **260**; counting chambers for helminths ova, **605**.
See also Technique and Apparatus, microscopy, staining.

TECHNIQUE AND APPARATUS—[cont'd.]

Immunological. Preparation of Vibrio fetus agglutination antigen, **258**; assessment of virus haemagglutinin by centrifugation, **395**; purification method for antiprotein antibodies, **412**; test for safety and activity of tetanus anatoxin, **415**; transfer of infection by syringes used for mass inoculations, **809**; rapid method for detection of virus of influenza during epidemics, **1356**; serum-formalin reaction in human sleeping sickness, **1986**; outfit for serological diagnosis of salmonellosis in meat, **2160**; anti-globulin technique applied to the detection of non-agglutinating antibody against S. Typhi O in human sera, **2184**; mechanism of the Gros titration and formolgel reaction, **2192**; method for preparing dourine antigen, **2540**; methods of preservation of complement, **2755**; new method for concentration of serum, **2756**; a method for tissue antibody demonstration, **2921**; allergic intradermal palpebral test for cattle, with worm-antigen, **3645**.

See also Bronchitis, Infectious; Embryos, Fowl, cultivation of micro-organisms in; Foot and Mouth Disease, immunology, virus; Immunology; Pox Diseases, cow pox; Zinc.

Laboratory. Safe electrically heated equipment, **264**; rapid bone sectioning, **614**; screw syringe, **616**; quantitative measurement of pulmonary retention of aerosols, **845**; technique and apparatus in photomicrography, **890**; intracerebral injection in mice via the orbit or nasal cavity, **894**; isolation of myofibrils by enzymatic methods, **1170**; "hanging-drop" cultivation of material from fungous diseases, **1213**; universal syringe buret, **1215**; flame photometry, **1216**; syringe as pipetting device, **1220**; preparation and measurement of concentration of bacterial aerosols, **1552**; a chrome-alum fixation preparation, **1553**; labour saving methods in cell count, **1554**; use of ethylene oxide for the sterilization of hospital equipment, **1821**; method for determination of susceptibility of materials to attack by micro-organisms, **1875**; comparison of deformalinizing technics, **1881**; an automatic ampoule injector, **1884**; a constant level boiling water bath, **1885**; laboratory procedure for veterinarians, **1891**; compact outfit for serological diagnosis of salmonellosis in meat, **2160**; safety measures in a TB. laboratory, **2410**; electrical apparatus to replace the Bunsen burner and alcohol lamp in isolating and transplanting micro-organisms, **2440**; a laboratory evaporator, **3101**; book, **3128**.

See also Disinfectants, Antiseptics and Sterilization; Pregnancy, diagnosis.

Media. A digest culture media using paw-paw in the tropics, **259**; silica gel media, **599**; for cultivation of Trichomonas vaginalis, **604**; growth of bacteria in the presence of peptones, **991**; acid fast bacilli in hen eggs, **1209**; liquoid for blood culture, **1212**; cultivation of Brucella on chemically defined media, **1639**; migration of C. welchii cultures in semisolid medium, **1640**; spontaneous hatching of Ascaris megalocephala eggs on silica-gel, **1748**; colony counts on strips of agar in tubes, **2181**.

See also Bacillus Anthracis Infection [Anthrax]; Eggs, Helminth; Embryos, Fowl; L-Substance; Mycobacterium Tuberculosis, cultivation; Viruses, cultivation.

Microscopy. Some recent advances, **261**; phase microscopy, **262**; fluoromicroscopy of tubercle bacilli, **305**; phase photomicrography, **606**; electron microscopy of fowl pox virus, **713**; electron micrograph of pleuro-pneumonia-like organisms, **988**; phase contrast microscopy of miracidium of Schistosoma mansoni, **1046**; observation of cells in vitro, **1214**; filamentous forms of influenza and fowl plague viruses examined with the electron microscope, **1359**; electronic methods of counting aerosol particles, **1551**; electron microscopical study of the cytology of avian tubercle bacilli, **1593**; demonstration of chromatinic bodies of Bact. coli and Proteus vulgaris under the phase contrast microscope, **1623**; structure of L. tropica under phase and electron microscope, **1664**; electron and light microscopic studies of bacterial nuclei, **1936**; fixation of electron microscopic specimens by the electronic beam, **1937**; fluorescence microscopy of tubercle bacilli, **2185**; use of electron microscope in water treatment control, **2186**; a simple micromanipulator, **2187**; colour phase-contrast microscopy, **2447**; inclusion bodies in bacteria under the electron microscope, **2539**; the reflecting microscope, **2754**; phase-contrast and electron-microscopical study of intracellular growth of fowl plague virus, **3585**; finer structure of hepatic, intestinal and renal cells of the mouse as seen by electron microscope, **3724**.

See also Books, microscopy.

Mounting. Resinous mounting media, **615**; method for preparing permanent slides of fungous cultures, **2445**; modification of the 'necol' technique for mounting microfungi, **3759**.

Protozoological. Chemotherapy and cultivation of Trichomonas foetus in chick embryos, **343**; thymol turbidity test in canine leishmaniasis, **1310**; growth of haemoflagellates in dialyzing sacs and production of growth inhibitory factor, **2268**.

Staining. Use of fluorescent dyes in bacterial counting, **600**; acid-fast bacteria, **601**; bacterial spores, **602**; protein silver for protozoa, **603**; silver impregnation of peripheral nervous pathways, **611**; staining of pineal parenchyma, **612**; mucihaematein technique, **613**; of nematodes, **1878**; rapid method for nematodes, **1879**; method for glomerular capillaries, **1880**; for differentiation of living and dead tubercle bacilli, **1927**; nerve fibres with silver, **2188**; vital staining of damaged liver cells, **2360**; differential staining for live and dead spermatozoa, **2415**; periodic acid-Schiff stain for fungi in animal tissue, **2442**; Hotchkiss-McManus stain for diagnosis of fungous diseases, **2443**; propylene and ethylene glycol solvents for Sudan IV and Sudan black B, **2448**; staining neuroglia with silver diaminohydroxide after sensitizing with sodium sulphite and embedding in paraffin, **2450**; effect of certain coal-tar dyes used for semen identification on livability and fertility of bull spermatozoa, **2748**; a new technique for H. farciminosum, **2752**; of tubercle bacilli, **2823**; of Diphyllobothrium ova, **2936**; new method for bacterial capsules, **3093**; synthesis of silver proteinates for neurological staining, **3096**; silver impregnation of degenerating axon terminals, **3097**; dye exchange in bacterial cells and the theory of staining, **3190**; technique for study of temperature-shock in semen, **3375**.

See also Technique and Apparatus, haematological.

Tissue Culture. Cultivation in vitro of chick embryo tissue in the presence of Petragnani's integral type anatuberculin, **102**; book, **3127**.

See also Tissue Culture.

Viruses and Rickettsia. The purification of viruses, **1025**; rapid diagnosis of contagious canine hepatitis by touch preparation of fresh liver tissue, **1367**; a menstruum for drying bacteria and viruses, **1876**; passage of rinderpest virus in pigs, **2015**; tumour-response curve resulting from logarithmic titration of chromatographed virus, **2314**; method for increasing yield of complement-fixing antigens of certain neurotropic viruses and use of newborn mice for production, **2899**.

See also Encephalomyelitis, Equine; Feulgen Reaction; Freeze-Drying; Newcastle Disease, immunology; Radioactive Isotopes; Rickettsia Infection, general.

Zootechnical. Electric fences for sheep, **254**; control of keds with high pressure sprays, **1038**; experiments on milking technique, **1206**; factors affecting rate of machine milking, **1207**; relationship of machine milking and mastitis, **1248**; spray tunnel for cattle, **2175**; a generator for producing dry aerosols with organic insecticides, **2436**; apparatus for transshipment of cattle, **2437**; a vat-side test for assaying D.D.T.-B.H.C. in dipping tanks, **3025**; an improved syringe hydrometer for testing cattle-dips, **3087**; modern insecticide sprayers, **3390**; an automatic feed hopper, **3402**.

See also Dehorning; Encephalomyelitis, Equine; Hygiene; Metabolism; Milking Machines; Stunning.

TEETH.

General. The fate of nerves of deciduous teeth, **536**; diet and dental development in sheep, **791**; histological structure of hard dental tissues in the horse, **2145**; canine odontology, **2722**; effect of strontium chloride-feeding on rat molars and their supporting tissues, **2967**; dentition of the cat, **3034**; post-natal development of inferior dental nerve in the cat, **3723**; ages of appearance of permanent incisors in zebu cattle in Brazil, **3754**.

See also Bones, general.

Diseases. Parodontal disease in hamsters, **171**; prevention of experimental caries by tube-feeding, **1113**; exposure of incisor roots in X-disease, **2090**; histopathology of jaws and teeth in a dwarfed Pekingese, **2098**; osteoporosis and dental changes in a pony, **2654**.

TEMPERATURE.

General. The effect of temperature on viability of P. avicida, **1619**; effect on sporulation and viability of B. anthracis, **1917**; effect of high temperature on pupal stage of Glossina in relation to trypanosomiasis transmission rate, **2613**.

See also Genital System, semen and spermatozoa; Immunology, complement-fixation.

Body. Environmental physiology, **539**; temperature reaction in cattle experimentally infected with F. & M. disease, **706**; book, physiology of heat regulation, **908**; heat regulation in sheep, **1156**; effect of receptor-destroying substances upon the febrile response of rabbits to influenzal viruses, **2006**; temperature measurements in rumen and abomasum of goats, **2394**; heat production and cardio-respiratory activities during gestation and lactation in cattle, **2695**; value of sweat glands for heat resistance of cattle, **2697**; reaction of Jersey cows to hot atmospheres, **2698**; reaction of Jersey calves to hot atmospheres, **2699**; normal temperature in Philippine mares, **2706**; intra-testicular temperatures in Merino rams, **3049**.

TEMPERATURE—[cont'd.]
Environmental. Environmental physiology, **539**; environmental temperature and insecticidal action of compounds against sheep ticks, **757**; hepatic changes in piglets reared in cold and damp environment, **814**; effect of diet on sheep breeds during short exposures to hot environment, **1068**; influence of ambient temperature on blood composition in cows, **1165**; tropical climates and sexual activity, **1202**; effect of external temperature on metabolism in Leghorn cocks, **1503**; temperature, oxygen and carbon dioxide in chicken boxes at various room temperatures, **1549**; effects of extreme heat on man, **1560**; influence of temperature on milk production and feed consumption in dairy cattle, **2387**; effect of high temperature and humidity on cattle, **2696**; tolerance of adult hens to hypothermia, **2700**; effect of cold on "formaldehyde-induced" arthritis in rats, **2991**; effect of temperature and relative humidity on the well being of swine, **3389**; affecting reaction of laying hens to iodinized proteins, **3756**.
See also Climate; Zootechny.
TERATOLOGY. Teratology, a textbook, **882**; incidence of female genital abnormalities in swine, **1545**; prolonged pregnancy in cows and malformation of the foetus ("bulldog calf"), **1546**; foetal death and maldevelopment from maternal vitamin A deficiency in the rat, **1771**; abnormalities in the beaks of developing chick embryos, **2364**; tibial hemimelia in cattle, **2433**; distinction between pathology of the foetus and the embryo, **3387**; lethal and other inherited factors causing abnormalities in New Zealand stock, **3388**.
TERMITES. Harvester termite control in South Africa, **1188**.
TERRAMYCIN. Aureomycin and terramycin in murine bartonellosis, **331**; effect on influenza virus, **371**; studies of terramycin, **1493**; treatment of mouse pneumonia caused by virus of feline pneumonitis, **2026**; interference with the action of penicillin, **2376**; for treatment of various infections, **3016**.
See also Pasteurella Septica; Staphylococci.
TESCHEN DISEASE. See Encephalomyelitis, Porcine.
TESTES. See Genital System, testes.
TESTOSTERONE PROPIONATE. See Sex Hormones, androgens.
TETANUS. See Clostridium Tetani Infection [Tetanus].
TETANY. Absence of respiratory change, tetany or high plasma pH produced by bicarbonate in dogs, **1158**; tetany or spasmophilia in dogs, **1435**.
TETRAZOLIUM. A ring test antigen prepared by reduction of tetrazolium salt, **1945**.
THALLIUM. See Poisons and Poisoning, inorganic poisoning.
THEILERIA ANNULATA. Nomenclature, **2560**.
See also Theileria Infection.
THEILERIA INFECTION.
General. In Uganda, **2199**; in Kenya, **2456**; in Nyasaland, **2769**; in Swaziland, **2770**; in N. Rhodesia, **2774**; in Zanzibar, **3419**; in Northern Rhodesia, **3421**.
In Cattle. B. argentine, B. bovis and Theileria annulata infection in cattle in Bulgaria, **68**; Th. mutans in Roumania, **1331**; Th. mutans associated with bovine anaplasmosis in the U.S.A., **1993**; distribution of bovine theileriasis, vector ticks and influence of altitude, in Ruanda-Urundi, **3533**.
Treatment and Control. Lomidine in Theileria infection in cattle, **353**; action of pamaquin on Theileria parva, **354**; anti-reticulo-endothelial cytotoxic serum (A.C.S.) in bovine theileriasis, **2561**; study of Th. annulata in Turkey and treatment, **2562**; treatment of East Coast fever with phenamidine and quinacrine, **3534**.
THEILERIA MUTANS. Theileria mutans in Roumania, **1331**; associated with bovine anaplasmosis in the U.S.A., **1993**.
THEILERIA PARVA. The action of pamaquin on Th. parva, **354**.
THELAZIA. Thelazia in the conjunctiva of cattle, **127**; life cycle of Thelazia rhodesii, parasitic in the eyes of cattle, **1051**; in cattle, **1052**; treatment, **1053**.
THEOBROMINE. Theobromine poisoning in ducks resulting from Cacao waste products, **188**.
THERAPEUTICS AND MATERIA MEDICA. Chemotherapy of experimental brucellosis in g. pigs, **323**; chemotherapy and cultivation of Trichomonas foetus in chick embryos, **343**; chemotherapy of helminth infestations, **443**; chemotherapy of reticulosis, **465**; commercial poultry remedies, **515**; blood volume and intravenous therapy, **516**; antibacterial substance from ticks in Texas, **521**; chemotherapy of virus diseases, **727**; drugfastness, **827**; resistance of M. tuberculosis to drugs, **928**; fluid therapy for the dehydrated animal, **1127**; pharmacodynamics of pulmonary absorption-aerosol and intratracheal penicillin, **1129**; combined penicillin and ice therapy, **1131**; British Pharmaceutical Codex, **1243**; book, sulphonamides, **1244**; chemotherapy of Litosomoides carinii, **1421**; chemotherapy of virus diseases, **1495**; use of chicks in the evaluation of antituberculous agents, **1595**; effect of streptomycin and chemotherapeutics on M. johnei in vitro, **1609**; treatment of brucellosis, **1635**; specific prophylaxis of infectious diseases of animals, **1805**; treatment of rumen tympany, **1806**; chemotherapy and penicillin therapy of mice infected with Str. aronson, **1910**; response of human cervix and corpus uteri to drugs, in early pregnancy, **2116**; physiotherapy in veterinary medicine, **2217**; behaviour of substrances introduced into the bovine mammary gland via the streak canal, **3005**.
See also Adrenal Gland, cortical hormones; Adrenocorticotrophic Hormone (A.C.T.H.); Alloxan; Amino Acids; Aminophylline; Aminopyrene; Amphenone "B"; Anaesthesia and Analgesia; Anthelmintics; Antibiotics; Anticonvulsants; Antimony; Aralen Dihydrochloride; Atebrin; 8-Azaguanine; B.A.L.; Barbiturates; Benadryl Hydrochloride; Books, pharmacology; Calciferol; Carbon Tetrachloride; Caricide; Chloramphenicol; Desoxycorticosterone; Diaminodiphenyl Sulphone; Doping; Dramamine; Emetine Hydrochloride; Enheptin-T; Ethylene Oxide; "Febrilat"; Formaldehyde; Fungicides; Guanine; Histamines; Hydroxylamine; Insecticides; Iodochloroxyquinoline; Magnesium Salts; Marbadal; Mepacrine; Methionine; Methyl Bromide; Mustard Gas; Mycobacterium Tuberculosis Infection, treatment; Neoarsphenamine; Neoplasms, treatment Neopyrithiamine; Neotodorit; Nitrofurans; Nitrofurazone; Paludrine; Para-Amino Benzoic Acid; Parasiticides; Parasorbic Acid; Pentabarbital; Phenamidine; Phenanthridinium Compounds; Phenothiazine; o'Phenylene Diamines; Plasmodium Berghei; Poisons and Poisoning; Pyribenzamine; Pyrrole; Quaternary Ammonium Compounds; Quinoline; Radioactive Isotopes; Salicylates; Sphingomyelins; Sulphonamides; Sulphones; Suramin; Theileria Infection, treatment and control; Theobromine; Thiosemicarbazides; Thiosemicarbazones; Thiouracil; Toxaphene; Trypanosoma Infection, treatment; Urecholine; Viroíral; Vitamins.
THERMODE. See Technique and Apparatus, general.
THIAMINASE. A plant thiaminase, **2701**.
THIAMINE. See Vitamins, vitamin B_1 (thiamine).
THIOACETAMIDE. Alteration of nuclear and cytoplasmic components of the liver cell with thioacetamide, **2102**.
THIOLS. See Lewisite.
THIOSEMICARBAZIDES. Chemotherapy of experimental TB., in vitro and in mice, **18** and **19**.
THIOSEMICARBAZONES. See Mycobacterium Tuberculosis Infection, treatment.
THIOURACIL. See Thyroid Gland, thiouracil and thiourea.
THIRST. Thirst and its inhibition in the stomach, **1157**.
THORAX. See Surgery.
THROMBIN. Action in the clotting of fibrinogen, **3041**.
THROMBOKINASE. See Blood, prothrombin.
THROMBOPLASTINS. See Blood, prothrombin.
THROMBOSIS. See Circulatory System, diseases.
THYMOL-TURBIDITY TEST. See Technique and Apparatus, protozoological.
THYMUS. Involution of bovine cervical thymus, **1862**; effect of thymectomy on spontaneous leucaemia in mice, **3285**; influence of thymectomy on incidence of carcinogen induced leucaemia in mice, **3286**.
THYROID GLAND.
General. Vascular lesions in dogs after thyroidectomy and viosterol feeding, **497**; effect of hypophysis, thyroid, sex steroids and adrenal cortex on granulation tissue, **1177**; effect of thyroid—and of dinitrophenol—induced hypermetabolism on atherosclerosis in cholesterol fed chicks, **1785**; gland weight in cattle, **1826**; effect of amphenone "B", **2379**; in sexual development of the male, **3052**; role of thyroidal materials and of synthetic goitrogens in animal production, **3755**.
See also Goitre.
Iodinated Proteins. Thyroprotein treatment of hens and thyroid size of chicks, **797**; growth stimulation in pigs by iodinated casein and stilboestrol, **1817**; galactopoietic effect, **2152**; absorption of iodine-B1 labelled iodinated casein in sheep, **2725**; effect of implantation and subsequent withdrawal of stilboestrol tablets combined with iodoprotein (protamone) feeding on induced lactation in goats, **3088**; "protamone" and egg production, **3089**; high environmental temperatures affecting reaction of laying hens to iodized casein, **3756**.
Thiouracil and Thiourea. Thiouracil and response of pullets to oestrogen, **531**; effect of thiouracil-induced hypothyroidism on experimental coccidiosis in chicks, **1325**; nutrition of the mouse, studies on pyridoxin and thiouracil, **2969**.
Thyroxine. Protective action of vitamin B_{12} against toxicity of DL-thyroxine, **2971**.
THYROPROTEIN. See Thyroid Gland, iodinated proteins.
TIBIONE. Mycobacterium Tuberculosis Infection, treatment.
TICK-BORNE FEVER. See Babesia Infection (Piroplasmosis), in cattle; Rickettsia Infection, general.
TICK PARALYSIS. Ornithodoros lahorensis and tick paralysis in the U.S.S.R., **112**.

TICKS.
General. In Australia, 272-274; antibacterial substance from ticks in Texas, 521; enzootic staphylococcal infection in lambs associated with tick-bite, 2467; in Union of South Africa, 2764; in Madagascar, 3425; distribution of bovine theileriasis, vector ticks and the influence of altitude, in Ruanda-Urundi, 3533.
See also Rickettsia Infection.
Argasidae. O. lohorensis and tick paralysis, 112; biology of O. furcosus, 1039; S. enteritidis in O. lahorensis, in Turkey, 2241; life history and habits of the ear tick O. megaini, 2616; laboratory rearing of A. persicus, 2932.
See also Ticks, control.
Control. Of Boophilus microplus with D.D.T. and benzene hexachloride, 110; synthetic insecticides for control of B. microplus, 429; tick repellent, 431; Sk-9 against ticks and lice, 432; S.N.P. in the control of A. persicus, 760; of B. microplus in cattle, 1041; in Uganda, 2199; chlordane and toxaphene in control of B. microplus, 2304; N-butyl-acetanilide as a repellent for A. americanum and D. andersoni, 2305; of D. variabilis with D.D.T., 2306; effect of gammexane, 2617; toxaphene for control of B. microplus, 3264; laboratory studies of combinations of piperonyl cyclonene, piperonyl butoxide, pyrethrins and rotenone for control of dog ticks, 3266; in Australia, 3412; eradication in the British Virgin Islands, 3631; toxicity of p-nitro-phenyldiethyl thiophosphate for ixodid ticks, 3632.
Ixodidae. Immunity to Hyalomma, Dermacentor and Rhipicephalus spp., 111; rickettsia isolated from Hyalomma savignyi in Morocco, 401; Rickettsia burneti in Amblyomma variegatum in French Equatorial Africa, 402; longevity of fasting H. savignyi, 430; ecology of the sheep tick, I. ricinus, 1040; scutum of Ixodes ricinus, 1406; the egg of I. ricinus, 1407; isolation of an encephalitis virus from I. ricinus, 1684; the genus Hyalomma, 1730; role of Hyalomma in the transmission of Q fever in Morocco, 2042; producing an antibacterial substance in Texas, 2467; Hyalomma spp. as vectors of equine piroplasmosis, in Turkey, 2556; role in theileriasis in Turkey, 2562; "fièvre boutonneuse" (R. conori) and Q fever in Rh. sanguineus, 2598; field studies with parasiticides to control the "bone star tick" A. americanum in Texas, 2930; effect of D.D.T. spray residues on larvae of D. variabilis, 2931; I. holocyclus and Rh. sanguineus harmful to dogs in Australia, 3265; D. marginatus, a vector of Babesia infection in horses, 3532; in camels, 3625.
See also Rickettsia Infection, Q fever; Ticks, control.
TINEA CAPITIS. See Ringworm.
TISSUE CULTURE. Alterations in cycle of Plasmodium gallinaceum after tissue culture passage, 352; in vitro development of mouse mammary glands, 1518; range of extracellular pH tolerated by macrophages and malarial parasites grown in tissue culture, 3531; host-cell-virus relationship in fowl pox, growth in tissue culture and inclusion produced by virus on the chick chorio-allantion membrane, 3545.
See also Technique and Apparatus, tissue culture.
TOADS. See Pregnancy, diagnosis.
TOCOPHEROL. See Vitamins, vitamin E.
TONGUE. Anatomy of the tongue of the buffalo, 3054.
See also Foot and Mouth disease, general.
TOXAEMIA. See Pregnancy, diseases.
TOXAPHENE. Toxicity to sheep and cattle, 182-185.
See also Ticks, control.
TOXOCARA. T. cati causing perforation of the intestine in cats, 124; associated with spasmophilia and canine hysteria, 2097.
TOXOPLASMA GONDII. See Toxoplasma Infection.
TOXOPLASMA INFECTION.
General. Experimental infection in mice with T. gondii, and epidemiological study, 69; epidemiology and transmission of T. gondii infection, 1333; toxoplasmosis in domestic animals in Australia, 1671; experimental congenital infection in the mouse, 1995; aureomycin treatment in rabbits, 2885; serological investigations of rabbits, infected with T. gondii, 2886; antigen for complement fixation test, 3203; experimental infection treated with aureomycin, 3204.
In Dogs. In Panama, 356; fatal intussusception of the canine caecum associated with toxoplasma, 2267; in Turkey, 2884.
See also Toxoplasms Infection, in man.
In Man. Role of dogs in the epidemiology of human toxoplasmosis, 1332; fatal case in a child, 1994.
TRACE ELEMENTS. In rumen micro-organisms, 220; effect on growth and fattening of swine, 2328.
See also Cobalt; Copper; Iron; Molybdenum.
TRACERS. See Radioactive Isotopes.
TRANSPORT. See Aircraft.
TRAUMATIC PERICARDITIS/GASTRITIS. See Digestive System, diseases.
TREMATODES. Egg count in sheep faeces, 260; some human flukes from Indonesia, 3270; in Canada, 3411.
See also Dicrocoelium; Eurytrema Pancreaticum; Fasciola; Paramphistomum; Schistosoma Infection; Troglotrema Salmincola.
TREPONEMA PALLIDUM INFECTION [SYPHILIS]. Cortisone treatment of experimental infection, 1148; life cycle of Treponema pallidum, 1649; serodiagnosis, 3187.
TRIATOMA. T. infectous as carrier of Chagas' disease, 703; T. protracta woodi and T. gerstaeckeri in Mexico, 1034.
TRICHINELLA INFECTION. Guide for Trichinella inspection, 291; general review, 765; in Panama, 1739; trichinosis in the Arctic, 2941; effect of roentgen rays on larvae, 3273; sulphonamide therapy in white mice, 3274; in Ontario, 3637; incidence in San Francisco, 3638; reports, Norway, 3770-3771.
TRICHLOROETHYLENE. See Poisons and Poisoning, organic poisoning.
TRICHOMONAS COLUMBAE. See Trichomonas Infection, in pigeons.
TRICHOMONAS FOETUS.
General. Pathogenicity for mice, 334; study of Tr. foetus from preputial samples of bulls, 999; effect of seven nitrofurans on Tr. foetus in vitro, 1000; discovery of Tritrichomonas by Mazzanti in 1900, 1311; in vitro action of sulphonamides, 1665; in vitro effect of certain antibiotics, 1666.
See also Trichomonas Infection.
Cultivation. Diagnosis by cultivation, 60; cultivation and diagnosis, 61; cultivation in chick embryos, 343.
TRICHOMONAS GALLINAE. Pathogenicity for mice, 334.
TRICHOMONAS INFECTION.
General. Laboratory diagnosis, 60; in chinchillas, 166; pathogenicity of trichomonad species for mice, 344; complement-fixation test in diagnosis, 998; complement-fixation test in the diagnosis, 1316; in cattle in Eire, 3769.
See also Trichomonas Foetus; Trichomonas Gallinae.
In Cattle. Transmission by artificial insemination, 59; control of venereal diseases in cattle, 170; artificial insemination for control of dourine, trichomoniasis, epididymitis and vaginitis, 238; vaginal mucus agglutination test, 342; complement-fixation test in diagnosis, 998; geographical distribution of bovine trichomoniasis, 1312; in Great Britain, 1313; in Spain, 1314; in Madagascar, 1315; complement-fixation test for the diagnosis, 1316; diagnosis in bulls, 1317; pathogenesis in the bull, 1318; host-parasite relationship, 1319; prevention, 1320; research at the Lister Institute, 1562; field studies, 1990; in the French zone of Germany, 2549; in New Zealand, 3110; in British Guiana, 3416.
See also Sterility, in cattle; Trichomonas Infection, treatment.
In Pigeons. Trichomonas columbae infection in pigeons in Czechoslovakia, 1321; in Kenya, 2456.
Treatment. Of infected bulls, 62; chemotherapy and cultivation of Trichomonas foetus in chick embryos, 343; use of antiseptics, 1991.
TRICHOMONAS VAGINALIS. Pathogenicity for mice, 334; survival in vaginal discharge, 694; treatment with aureomycin, 695.
See also Technique and Apparatus, media.
TRICHOPHYTON. Amorphous penicillin G and growth of Trichophyton mentagrophytes, 982; survey of dermatophytoses in Great Britain, 1962; in vitro evaluation of water soluble fungicides against Trichophyton, 2183; effect of cortisone on infected g. pigs, 3333.
TRICHOSTRONGYLUS. List of trichostrongylid lungworms, 117; phenothiazine against Trichostrongylus axei in sheep, 119; resistance of sheep to Haemonchus contortus and Trichostrongylus spp., 1048; parasitic gastro-enteritis in sheep, 2062; antibody response in sheep, 2310; in camels treated with phenothiazine, 2311; in sheep, 3277; in Australia, 3412; in camels, 3625.
See also Strongyles.
TRICHOSURUS VULPECULA. See Phalangers.
TRICHURIS. In parasitic gastro-enteritis in sheep, 2062.
TRIETHYLENEGLYCOL. In disinfection of air, 1155; effect on dried air-borne bacteria, 2224.
TRINIDAD AND TOBAGO. See Reports, Trinidad and Tobago.
TRIPHENYL METHANE. See Anthelmintics.
TRISODIUM PHOSPHATE. See Technique, bacteriological.
"TRISTEZA." See Babesia Infection [Piroplasmosis], in cattle.
TROGLOTREMA SALMINCOLA. Role of metacercariae in Salmon disease of dogs and foxes, 98.
TROMBICULA. Infestation of domestic animals with T. antamnalis, 761; control of "red bug" with N-butyl-acetanilide, 2305.
See also Schöngastia Indica.
TROPICAL COUNTRIES. Oxyspirura mansoni a tropical eyeworm in poultry, 1054; book, tropical diseases, 1895.
See also Climate; Reports; Research Institutes, Mexico; Technique and Apparatus, media.
TRYPAFLAVINE. See Babesia Infection [Piroplasmosis], Treatment; Trypanosoma Infection, treatment.
TRYPANOSOMA ANNAMENSE. Acquired drug resistance, 2445.

TRYPANOSOMA BRUCEI INFECTION [NAGANA]. The persistence of parabasal body in T. brucei, 338; influence of trypaflavine on blepharoblast of T. brucei, 682; comparison of two strains of T. brucei, 997.
TRYPANOSOMA CAZALBOUI INFECTION. See Trypanosoma Vivax.
TRYPANOSOMA CONGOLENSE INFECTION. Chemotherapy of T. congolense infection, 684; treatment in cattle with antrycide, 685; bovine trypanosomiasis in the Belgian Congo, 1302; pentamidine prophylaxis, 1303; in Sierra Leone, 2201; resistance to treatment of a strain in Uganda, 2255; natural drug resistance, 2545.
TRYPANOSOMA CRUZI INFECTION [CHAGAS' DISEASE]. Chagas' disease in Uruguay, 703; Chagas' disease in Chile, 1306; infection in a baby, 1307; epidemiology in Bolivia, 1985; transmission to Trichosurus onipecula, 3194.
TRYPANOSOMA EQUINUM INFECTION [MALDE CADERAS]. Laboratory diagnosis, 687; experiments with T. venezuelense and T. equinum, 2544.
TRYPANOSOMA EQUIPERDUM INFECTION [DOURINE]. Control by artificial insemination, 238; serological diagnosis, 688; in Czechoslovakia, 1301; transmission to laboratory animals, 1983; in Yugoslavia, 2205; in Germany, 2460; preparation of antigen using dogs, 2540; pentamidine treatment, 3192.
TRYPANOSOMA EVANSI INFECTION [SURRA]. Action of naganol on Tr. evansi in vitro, 340; races of T. evansi produced by mutation, 689; distribution of T. evansi in rats and g. pigs at various stages of infection, 690; in Cambodia, 1662; naganol (suramin) and arsocoll in horses infected with Tr. evansi, 1663; action of trypaflavine, 1984; treatment in horses with dimidium bromide, 2258; akinetoplastic strains of T. evansi and allied trypanosomes in America, 2541; susceptibility of recovered horses and naganol and arsocoll treatment, 2542; tryparsamide, treatment, 2543.
TRYPANOSOMA GAMBIENSE INFECTION. Oral chemoprophylaxis against T. gambiense infection in rats, 341.
TRYPANOSOMA INFECTION.
General. Antrycide treatment of trypanosomiases in cattle, 339; in Union of South Africa, 1230; in Nigeria, 1237-1238; in the Belgian Congo, 1302; in Uganda, 2199; in East Africa, 2200; in East Africa, 2457; parasitological investigations in relation to animal industry in S. Africa, 2608; trypanosomiasis and tsetse in the Anglo-Egyptian Sudan, 2611; survey and control in Kenya, 2612; effect of high temperature on pupal stage of Glossina in relation to transmission rate, 2613; in Uganda Protectorate, 2768; in Nyasaland, 2769; in Swaziland, 2770; in Bechuanaland, 2772-2773; in N. Rhodesia, 2774; International Committee for trypanosomiasis research, West African Institute for trypanosomiasis, a review, 3066; in Nyasaland, 3768.
See also Glossina.
In Cattle. Antrycide treatment in Ruanda-Urundi, 339; dimidium bromide prophylaxis against bovine trypanosomiasis, 686; treatment of experimental T. vivax—cazalboni infection in horses and cattle with phenanthridinium 897 and 1553, 691; use of stilbamidine in diagnosis of latent infection in cattle, 2259; pathology and immunity, 3191.
See also Trypanosoma Vivax Infection; Trypanosoma Infection, treatment.
In Horses. See Trypanosoma Equiperdum Infection [Dourine]; Trypanosoma Evansi Infection [Surra]; Trypanosoma Vivax Infection.
In Man. Control of sleeping sickness by clearing of tsetse infected areas in French West Africa, 1304; T. rangeli infection in man, 1305; treatment of human trypanosomiasis, 1308; serum-formalin reaction in T. rhodesiense sleeping sickness, 1986.
See also Trypanosoma Cruzi Infection [Chagas' disease].
Treatment and Control. Antrycide treatment of cattle, 339; action of naganol, 340; oral chemoprophylaxis against Tr. gambiense infection in rats, 341; amino acids and trypanocidal activity of parasorbic acid, 525; determination of antrycide, 526; influence of trypaflavine on blepharoblast of T. brucei, 682; chemotherapy of experimental trypanosomiasis, 683; phenanthridine compounds in T. congolense infection, 684; chemotherapy of T. congolense and T. vivax infection in cattle with antrycide, 685; dimidium bromide in prophylaxis against bovine trypanosomiasis, 686; phenanthridinium compounds 897 and 1553 in treatment of experimental T. vivax—cazalboui infection of cattle and horses, 691; of T. vivax infection in cattle, 692; toxicity of antrycide dimethosulphate, 693; action of suramin and antrycide on enzymes, 835; pentamidine as a prophylactic in T. congolense infection, 1303; treatment of human trypanosomiasis, 1308; work on antrycide, 1309; suramin and arsocoll in horses infected with Tr. evansi, 1663; estimation of phenanthridinium compounds, 1809; antrycide absorption and persistence, 1810; trypaflavine in surra, 1984; antrycide and dimidium, 1987; antrycide trials in the Belgian Congo, 1988; resistance to "melarsen" tryparsamide and amidines in pathogenic trypanosomes after treatment with "melarsen" alone, 1989; in Uganda, 2199; resistance to antrycide and dimidium bromide treatment of a T. congolense strain in Uganda, 2255; control in the Anglo-Egyptian Sudan, 2256; phenanthridinium 1553, for horses and cattle, 2257; treatment of surra with dimidium bromide, 2258; new trypanocides, 2260; of surra with naganol and arsocoll, 2542; of surra with tryparsamide, 2543; action of diamidines in distinguishing natural drug resistance in T. congolense and acquired in T. annamense, 2545; control in livestock in Northern Rhodesia, 2875; with antrycide, 2876; with antrycide in the Belgian Congo, 2877-2878; game, tsetse and trypanosomiasis control, 2928; relative values of antrycide and dimidium bromide, 3007; pentamidine in dourine, 3192; mode of action of antrycide, 3196; in East Africa, 3418; in Zanzibar, 3419 and 3420; in Northern Rhodesia, 3421; field experiments, 3524.
TRYPANOSOMA RANGELI INFECTION. T. rangeli infection in man, 1305.
TRYPANOSOMA RHODESIENSE INFECTION. Serum-formalin reaction in T. rhodesiense sleeping sickness, 1986; modification after prolonged passage, 2546.
TRYPANOSOMA SIMIAE. Serial passage in sheep, 3193.
TRYPANOSOMA VENEZUELENSE. Experiments with T. venezuelense and T. equinum, 2544.
TRYPANOSOMA VIVAX INFECTION. Treatment with antrycide, 685; treatment in horses and cattle with phenanthridinium, 691; treatment of infection in cattle, 692; trypanosomiasis in the Belgian Congo, 1302; susceptibility of rats, g. pigs, hedgehogs, monkeys, sheep, goats, cattle and horses, 2547; susceptibility of the hyrax (Dendrohyrax arborea), 3195.
TRYPARSAMIDE. See Trypanosoma Infection, treatment.
TRYPTOPHAN. See Nutrition.
TSETSE FLIES. See Glossina.
TSUTSUGAMUSHI DISEASE. See Rickettsia Infection, scrub typhus.
TUBERCULIN TEST. See Mycobacterium Tuberculosis Infection, Tuberculin Test.
TULARAEMIA. See Brucella Tularensis Infection [Tularaemia].
TULIP BULBS. Oestrogenic properties of tulip bulbs, 591.
TUMOURS. See Neoplasms.
TUNISIA. See Newcastle Disease.
TURKEY. See Acuaria; Aujeszky's Disease; Babesia Infection [Piroplasmosis], in horses; Bacillus Anthracis Infection [Anthrax]; Bluetongue; Brucella Infection, in cattle; immunology; Brucella Tularansis Infection [Tularaemia]; Corynebacterium Infection, in horses; Encephalomyelitis, Equine, Borna disease; Histoplasma Farciminosum Infection [Epizootic Lymphangitis]; Leptospira Infection, in cattle; Mycobacterium Tuberculosis Infection, in cattle; Newcastle Disease, general; Oestridae, Hypoderma; Pfeifferella Mallei Infection [Glanders]; Rabies, immunology, treatment and control; Rickettsia Infection, Q fever; Salmonella Enteritidis; Theileria Infection; Toxoplasma Infection, in dogs; Urinary System, diseases; Wohlfahrtia.
TURKEYS. Fowl cholera in turkeys, 29; phenothiazine and sulphonamides in histomoniasis and coccidiosis, 65; growth pattern of respiratory virus from fowls and turkeys, 391; actinomycosis in turkeys, 977; lactobacilli from turkeys, 1617.
See also Actinomyces Infection; Digestive System, flora and fauna; Eggs, Hen, hatchability; Eimeria Infection [Coccidiosis], avian; treatment; Erysipelothrix Rhusiopathiae Infection, in turkeys; Fowls, protozoan diseases; Histomonas Meleagridis Infection [Blackhead]; Pasteurella Infection, avian; Perosis; Poisons and Poisoning, plant poisoning; Salmonella Gallinarum Infection; Salmonella Pullorum Infection; Sinusitis Infections, Of Turkeys; Vitamins, vitamin D.
"TWEEN 80." Effect on bacteriostatic activity of antituberculous compounds, 3461.
TWINS. See Multiple Births.
TYMPANITES. Treatment, 1806; caused by TB. lesions in the media stinal lymphnodes in cattle, 2819.
TYPHOID FEVER. See Salmonella Infection, in man.
TYPHUS, MURINE. See Rickettsia Infection, murine typhus.
TYPHUS, SCRUB. See Rickettsia Infection, scrub typhus.
TYROSINE. Metabolism in experimental megaloblastic anaemia and in scurvy of monkeys, 2326.

U

UDDER. Effect of aureomycin on Staph. pyogenes in the bovine udder, 295; use of penicillin in the prevention of Corynebact. pyogenes infection in the non-lactating udder, 313; artificial lactation and perfusion of the bovine udder, 546; effect of bacterial infection on milk yield in cows, 912; plasmacytosis of the bovine udder during colostrum secretion and experimental cessation of milk, 1832; direct

UDDER—[cont'd.]
injection of penicillin in mastitis, **2375**; distributon of liquids infused into the udder, **2484**.
See also Corynebacterium Infection, in cattle; Mammary Gland; Mastitis, Bovine; Streptococcus Agalactiae.
UDOLAC. See Diamindiphenyl Sulphone.
UGANDA PROTECTORATE. See Parasiticides; Reports, East Africa; Trypanosoma Congolense Infection.
ULTRASONIC WAVES. Effect on blood elements from leucaemic subjects, **557**; for detecting changes of texture in living tissues, **2357**; effect on filariasis of cotton rats and bilharziasis of mice, **3283**.
ULTRAVIOLET LIGHT. Inactivation of hepatitis virus by ultraviolet rays, **738**; bactericidal action of ultraviolet irradiation, **844**; studies with irradiated TB. vaccines, **1601**; ultraviolet irradiation in the production of rabies vaccines, **3220**; light-induced recovery of Bact. coli from ultraviolet radiation injury, **3520**.
See also Technique and Apparatus, bacteriological.
ULTRAVIRUSES. See Viruses, general.
UMBILICAL CORD. See Anatomy.
UNDULANT FEVER. See Brucella Infection, in man.
UNION OF SOUTH AFRICA. See Brucella Infection, general; Glossina; Newcastle Disease; Nutrition, horses, sheep; Parasitic Infestation; Pasteurella Infection, avian; Poisons and Poisoning, plant poisoning; Reports, Union of South Africa; Rickettsia Infection, Q fever; Stephanurus; Termites.
UNION OF SOVIET SOCIALIST REPUBLICS. See Bacillus Anthracis Infection [Anthrax]; Brucella Infection, in horses; Brucella Infection, treatment and control; Brucella Tularensis Infection [Tularaemia]; Dicrocoelium; Education, U.S.S.R.; Leptospira Infection, in swine; Musca convexifrons; Rickettsia Infection, Q fever; Services, Veterinary, U.S.S.R.; Research Institutes, U.S.S.R.; Tick Paralysis; Zootechny.
UNITED KINGDOM. See Behaviour of Animals; Brucella Infection; Clostridium Infection, in sheep; Cysticercus; Fasciola; Food Hygiene, food poisoning (in man); Fungi; Helminth Parasites; Hepatitis, Canine Virus; Hypocupraemia; Leptospira Infection, in man from animals; Mastitis, Bovine, streptococcal infection; Newcastle Disease; Orf; Paramphistomum; Poliomyelitis; Pox Diseases, cow pox; Rickets; Rickettsia Infection, Q fever; Salmonella Infection, in man; Trichomonas Infection, in cattle.
UNITED NATIONS. See Organisations, International.
UNITED STATES OF AMERICA. See Antibiotics, general; Bacillus Anthracis Infection [Anthrax]; Brucella Infection, treatment and control; Climate; Clostridium Botulinum Intoxication [Botulism]; Cobalt; Echinococcus; Education; Encephalomyelitis, Equine; Erysipelothrix [Listeria] Monocytogenes Infection; Filariae; Haemoproteus Infection; Histoplasma Infection, in cattle, in dogs; Leucocytozoon Infection; Mastitis, Bovine; Mites; Moths; Newcastle Disease; Parasitic Infection, General; Pasteurella Infection, general; Pastures and Grazing; Protostrongylus; Reports, U.S.A.,; Research Institutes, U.S.A.; Smog; Rickettsia Infection, murine typhus; Q fever; Theileria Mutans; Ticks, control, Ixodidae; Trichinella Infection; Vibrio Fetus Infection; Zootechny.
URAEMIA. See Urinary System, diseases.
URATE. See Kidneys, general.
UREA. Toxicity for sheep, **3354**.
See also Babesia Infection [Piroplasmosis], treatment.
URECHOLINE. Effect on stomach, intestine and urinary bladder, **2118**.
URETHANE. Effect on lymphatic tissue of normal and adrenalectomized rats, **2155**; anti-leucaemic action of urethane plus nitrogen mustard, **2317**; in mouse leucaemia, **2956**.
URIC ACID. See Urinary System, diseases, urine.
URINARY SYSTEM.
General. Tuberculostatic activity of blood and urine from animals given gliotoxin, **413**; excretion of water, **537**; chromogens of cattle urine, **856**; urinary antimony excretion after antimony treatment, **1126**; methods and equipment used in separation of urine from faeces in cattle, **1870**; examination of horses' urine to establish functioning of kidneys, **2087**; injury to the urinary tract after sulphonamide therapy, **2365**.
See also Hormones; Pregnancy, diagnosis.
Bladder. Effect of urecholine, **2118**.
Diseases. Prevention of acute uraemia of newborn rats by vitamin B_{12}, **484**; urinary calculi in sheep, **494**; porphyrin in urine, first symptom of lead poisoning, **1114**; renin proteinuria in the rat, **1159**; bovine haemoglobinuria, **1779**; experimental production of urinary calculi, **1784**; hypouricaemia with tubular elimination of uric acid, **1847**; haematuria in pyridoxin-deficient rats, **2083**; urolithiasis in mink, **2099**; haematuria in calves, **2203**; relation between urinary calculi and sorghum feeding in cattle, **2641**; chronic haematuria in cattle in Turkey, **3313**; urinary calculi in sheep, **3412-3413**; mechanism of proteinuria, **3725**.
See also Myohaemoglobinuria, Paralytic.
Kidneys. See Kidneys.
Urine. Effect of A.C.T.H. and adrenalin on the number of circulating eosinophils and on excretion of uric acid and creatinine, **2146**; excretion of oestrogens in the urine of non-pregnant ewes, **2422**; normal blood and urine values in mink, **2711**; relation of sodium chloride depletion to urine excretion and water intoxication, **3670**.
See also p-Aminobenzoic Acid; Hyaluronidase; Pregnancy, diagnosis.
UROLITHIASIS. See Urinary System, diseases.
URUGUAY. See Anaemia, Equine Infectious; Babesia Infection (Piroplasmosis); Epidermoptes; Mycobacterium Tuberculosis Infection, in cattle; Ringworm; Sinusitis, Infectious, Of Turkeys.
U.S.A. See United States of America.
U.S.S.R. See Union of Soviet Socialist Republics.
USTILAGO. U. maydis causing pneumonia in cattle, **2530**.
UVEITIS. See Eyes, diseases.

V

VACCINIA. See Pox Diseases, vaccinia.
VAGINA. See Genital System, vagina.
VALVULOTOMY. See Circulatory System, heart.
VARIOLA. See Pox Diseases, small pox.
VEILLONELLA. V. gazogenes, a bacterium producing propionic acid, isolated from ovine rumen, **2873**.
VEINS. See Circulatory System, veins.
VENEREAL DISEASES. See Law, Austria; Neoplasms; Treponema Pallidum Infection; Trichomonas Infection; Trypanosoma Equiperdum Infection [Dourine]; Vibrio Fetus Infection.
VENEREAL SARCOMA. See Neoplasms, venereal.
VENEZUELA. See Bartonella Infection, in dogs; Fasciola; Oestridae, Gastrophilus; Onchocerca; Sparganum.
VENOMS. See Snake Venoms.
VENT DISEASE. In rabbits in Malta, **3414**.
VENTILATION. Static pressure and ventilation in rooms, **235**.
VERMIN CONTROL. Toxaphene for grasshopper control, **182-185**; rat poisons sodium fluoroacetate and "castrix", **508**; new rodenticides, **1186**; harvester termite problem in South Africa, **1188**; occupational hazards in handling pesticides, **1473**; control of rats, **2129**; control of rats with "warfarin", **2162**; D.D.T. as a rodenticide, **2740**.
See also Alpha-Naphtyl Thiourea [ANTU]; Wild Pigs.
VERTEBRAE. See Bones, general; Disc Protrusion.
VIBRIO CHOLERAE. Purification of receptor destroying enzyme, **2813**.
VIBRIO FETUS INFECTION. In Virginia, **9**; V. fetus agglutination antigen, **258**; agglutination test in vibrionic abortion of sheep, **327**; cause of enzootic sterility, **1644**; in aborted material from cows inoculated with Strain 19 vaccine, **1951**; preservation by lyophilization, **1952**; intra-uterine antibiotic treatment of vibrionic sterility in dairy cows, **2248**; in cattle, **2814**; cultivation on incubated hens' eggs, **2815**; in cattle, **3176**; vibriosis in cattle, **3177**; in a dairy herd, **3444**; in a goat herd, **3445**.
VIBRIONIC DYSENTERY IN SWINE. See Dysentery, Swine.
VINYLITE-CORROSION TECHNIQUE. See Technique and Apparatus, general.
VIOSTEROL. See Vitamins, vitamin D.
VIRGIN ISLANDS [BRITISH]. See Leeward Islands.
VIROFRAL. A new remedy for virus diseases, **836**.
VIRUS ABORTION. Equine virus abortion, **1362**; in mares, a discussion, **2279**; complement-fixation test for diagnosis, **2280**; inclusion bodies in tissues of aborted foetuses, **3224**.
VIRUS ABORTION, OVINE. Enzootic abortion in ewes, **2025**; in ewes, **2903**; in ewes, **3566**.
VIRUS ENTERITIS. In mink, **383**.
VIRUS PNEUMONIA. Pneumonia, virus.
"VIRUS X." Similarity between D.D.T. poisoning and "virus X" gastro-enteritis, **2368**.
VIRUSES.
General. Viral inclusion bodies in diagnosis, **94**; nucleoproteins in virus infections, **2912**; cellular infection by influenza and related viruses, **370**; assessment of virus haemagglutinin by centrifugation, **395**; chemotherapy of virus diseases, **727**; host-virus interactions, **740**; serological relationship between mumps and Newcastle disease viruses, **1017**; inactivation of viruses by liquid ethylene oxide, **1023**; formolization and vaccination against ultraviruses, **1024**; purification of viruses, **1025**; possible significance of milk and water in the spread of virus infections, **1179**; recovery of viable micro-organisms and viruses from vapours of material during lyophilization, **1226**; chemotherapy of virus diseases, **1495**; a menstrum for drying bacteria and viruses, **1876**; relationship between virus and host cell, **2037**; virus theory of cancer, **2070**; action of aureomycin in experimental infections, **2295**; inactivation by heat, **2296**;

VIRUSES—General—[cont'd.]
nucleoproteins in virus infections, **2912**; chemical process of virus production in the living body, **3255**; role of l-methionine in virus propagation, **3611**.
See also Antibiotics, general; Aujeszky's Disease; Bacteriophage; Committees, Conferences and Congresses; Coxsackie Virus; Dengue Fever; Foot and Mouth Disease; "Grey Lung" Virus; Herpes; Influenza, general, virus; Leucaemia; Neoplasms; Nucleoproteins; Poliomyelitis; Pox Diseases; Rabies; Rinderpest; Silkworm Virus; Virus Enteritis; Virus Pneumonia; "Virus X"; Virofral.
Of Cattle. See Aujeszky's Disease; Catarrh, Malignant Bovine; Foot and Mouth Disease; Influenza, in cattle; Pox Diseases, cow pox; Rinderpest; Stomatitis, Vesicular.
Cultivation. Growth pattern of respiratory disease virus from poultry, **391**; serial passage of Aujeszky's disease virus in rabbits by scarification, **710**; cultivation of influenza virus in de-embryonated eggs, **1357**; filamentous forms of influenza and fowl plague viruses under the electron microscope, **1359**; incomplete growth cycle of influenza virus in mouse brain, **1682**.
See also Bronchitis, Infectious; Foot and Mouth Disease, virus; Newcastle Disease, virus; Rabies, virus.
Of Dogs. See Dogs, virus diseases.
Of Fowls. Growth pattern of chronic respiratory disease viurs, **391**; an unknown (? virus) fowl disease in Holland, **1783**.
See also Bronchitis, Infectious; Fowl Plague; Leucosis, Avian; Newcastle Disease, virus; Pox Diseases, fowl pox; Psittacosis; Sinusitis, Infectious, Of Turkeys.
Of Horses. See Anaemia, Equine Infectious; Horse-Sickness, African; Horses, virus diseases; Viruses, neurotropic.
Immunology. Application of conglutinating complement absorption test to viruses, **407**; titration of milk agent virus in milk and mammary gland cells, **460**; interference between lymphocytic choriomeningitis and MM viruses, **1022**; immunological study of pox viruses, **1679**.
See also under names of specific diseases and under Immunology.
Inclusion Bodies. Importance in diagnosis of human diseases, **94**; herpes virus and cell nucleus, **367**; nasal inclusion bodies in distemper, **379**; inclusion bodies in diagnosis of distemper, **1014**; acid-fast inclusion bodies in nerve cells in bovine malignant catarrh, **1691**; experimental transmission and occurrence of inclusion bodies in the central nervous system in bovine malignant catarrh, **2282**.
See also Pox Diseases, fowl pox; Rabies; Virus Abortion.
Of Man. See Liver, diseases; Mumps; Poliomyelitis; Pox Diseases, smallpox; Rabies; "Virus X"; Viruses, neurotropic.
Neurotropic. Encephalomyocarditis group, **75**; immunology, isolation, pathogenicity, haemagglutination of Mengo encephalomyelitis virus, Columbia-SK and MM viruses, and encephalomyocarditis virus, **76-80**; Eastern equine encephalomyelitis virus isolated from chicken lice and mites, **81**; neurotropic and viscerotropic strains of Columbia SK and encephalomyocarditis virus, **372**; a virus isolated from patients of non-paralytic poliomyelitis or aseptic meningitis, **393**; antigenic relationship of viruses producing encephalitis in mice, **718**; mouse encephalomyelitis (TO strain), **1010** and **1011**; relationship of a Czech human encephalitis virus to louping-ill virus, **1361**; a virus isolated from a case of "non-paralytic poliomyelitis" and its possible relation to the Coxsackie group, **1687**; lesions in suckling mice caused by certain viruses isolated from cases of "non-paralytic poliomyelitis" and of pleurodynia, **1688**; isolation of a neurotropic virus from a dog's brain, a child's stool and from a pig, **2002-2004**; method for increasing yield of complement-fixing antigens of certain neurotropic viruses, **2899**; pseudopoliomyelitic diseases of animals, **3247**.
See also Aujeszky's Disease; Distemper, Dog; Encephalitis; Encephalomyelitis, Porcine; Newcastle Disease; Poliomyelitis; Rabies.
Of Sheep. See Sheep, virus diseases.
Of Swine. See Swine, virus diseases.

VITAMINS.
General. Effect on tumours, **132**; inhibition of tubercle bacilli by vitamin analogues, **309**; vitamin supplements for new-born calves, **1440**; vitamin content of cured forage and utilization by lambs, **1443**; avitaminosis in dogs in the Arctic, **1769**; biochemistry of vitamin function, **1770**.
See also Milk Fever.
Vitamin A. Vitamin A in beef cattle, **153**; conversion of carotene in sheep, **154**; effect of hypervitaminosis A on foetal mouse bone in vitro, **479**; vitamin A and C content of sows' colostrum and milk, **547**; vitamin A and E in Anopheles, **1037**; effect of deficiency on ketosis, **1081**; carotenoids and reproduction, **1439**; action on bone, **1441**; tests for antioxidant activity by stabilization of vitamin A and carotene, **1555**; effect on reproduction in grazing ewes, **1768**; foetal death and maldevelopment from maternal deficiency in the rat, **1771**; use of water-miscible vitamin A for lambs, **1816**; factors affecting vitamin A and carotenoid content of colostrum, **1834**; and fertility in cows, **3672**.
Vitamin B complex. Biotin deficiency causing cryptorchidism in rats, **155**; B. complex deficiency, **481**; effect of folic acid on embryonic development in fowls, **805**; disappearance of folic acid from bacterial cells, **995**; nicotinic acid and nutrition of calves, **1442**; the B vitamins in relation to cobalt deficiency in sheep, **1772**; relation of gram stain to cell wall and ribonucleic acid content of the cell, **1981**; effect of a deficiency of the B complex (except thiamine) on blood pressure in rats, **2339**; relation between age of calf and levels of thiamine, riboflavin and nicotinic acid found in the digestive tract, **3296**; pellagra in pigs, **3297**; niacin deficiency and enteritis in growing pigs, **3299**; pantothenic acid deficiency in baby pigs, **3300**; interrelationship of vitamin B_{12} and folic acid in the baby pig, **3302**; the biochemistry of B vitamins, **3436**; pyridoxine and pantothenic acid deficiency in swine, **3676**.
Vitamin B_1 [Thiamine]. Synthetic vitamin B_1 in bovine malignant catarrh, **82**; vitamin B_1 deficiency in rats caused by bracken diet, **187**; sulphonamides and aneurin economy, **213**; effect of thiamine analogue on rat tissues, **480**; histamine and thiamine inhibition of influence of antihistamines on bacteria, **522**; acute vitamin B_1 deficiency in goats, cattle and horses, **1079**; biological activity of vitamin B_1 modified by action of a substance from bracken leaves, **1450**; inactivation of thiamine by bracken, **1451**; mechanism of the anti-aneurin activity of bracken, **1453**; deficiency in the lamb, **2340**; deficiency in the calf, **2644**; metabolism of thiamine in sheep, **2645**; experimental deficiency in foals, **2647**; effect of analogues on growth and on content of rat tissues, **2705**; cardiac lesions in thiamine deficiency in pigs, **3298**; for treatment of paralytic myohaemoglobinuria, **3674**; beri-beri (thiamine deficiency) in dogs in Indo-China, **3675**.
See also Aneurinase; Thiaminase; Vitamins, vitamin B complex.
Vitamin B_2 [riboflavin]. In sow's milk, **806**; deficiency in lambs, **1080**; dried penicillium mycelium as a riboflavin source in chick rations, ; selective toxicity of 1, 2-dichloro-4, 5 diaminobenzene in relation to vitamin B_2 and B_{12} requirements, **2343**.
See also Vitamins, vitamin B complex.
Vitamin B_6 [Pyridoxine]. Haematuria in pyridoxine-defient rats, **2083**; pathogenesis of experimental arteriosclerosis in pyridoxine deficiency, **2341**; studies on free erythrocyte protoporphyrin, plasma copper and plasma iron in normal and pyridoxine deficient swine, **2968**; nutrition of the mouse, studies on pyridoxine and thiouracil, **2969**; pyridoxine and pantothenic acid deficiency in swine, **3676**; deficiency in baby pigs, **3677**.
Vitamin B_{12}. Prevention of uraemia in newborn rats by vitamin B_{12}, **484**; a therapeutic agent, **839**; cobalt and synthesis of vitamin B_{12} in rumen of sheep, **1073**; selective toxicity of 1,2-dichloro-4, 5-diaminobenzene in relation to vitamin B_2 and B_{12} requirements, **2343**; effect of various levels of vitamin B_{12} upon aureomycin-produced growth in chicks, **2344**; effect on hepatic injury produced by carbon tetrachloride, **2370**; pernicious anaemia and vitamin B_{12}, the cobalt containing vitamin, **2646**; toxicity of glycine for deficient chicks, **2963**; protective action against toxicity of DL-thyroxine, **2971**; in crystalline form in the nutrition of the baby pig, **2972**; in prevention of hydrocephalus in infant rats, **2973**; for treatment of nervous distemper, **3234**; interrelationship of vitamin B_{12} and folic acid in the baby pig, **3302**; reproduction in vitamin B_{12}-deficient rats with emphasis upon intrauterine injury, **3303**; a discussion, **3304**.
Vitamin C [Ascorbic Acid]. Content of sows' milk and colostrum, **547**; bones, muscles and vitamin C, **807**; interrelationship of desoxycorticosterone, cortisone and vitamin C and genesis of mesenchymal lesions, **1496**; content of the pituitary gland in relation to stress and adrenalectomy, **2154**; tyrosine metabolism in experimental megaloblastic anaemia and scurvy of monkeys, **2326**; content of liver, kidney and plasma of cows, calves and foetuses, **2345**; experimental deficiency in foals, **2647**; effect on "formaldehyde-induced" arthritis in rats, **2991**; action on tuberculin sensitivity in g. pigs, **3155**.
Vitamin D. And susceptibility of mice to experimental swine influenza, **368**; vascular lesions in dogs after thyroidectomy and viosterol feeding, **497**; vitamin D requirements of chicks, poults, ducklings and goslings, **800**; intoxication, **3673**.
Vitamin E. Effect of level of tocopherols on metabolism in pigs, **801**; vitamins A and E in Anopheles, **1037**; in cattle nutrition, **1076**; deficiency in chicks, **1077** and **1078**; peroxidation and yellow-brown pigment in fat of

VITAMINS—Vitamin E—[cont'd.]
deficient rats, **1161**; causation and treatment of infertility, **1198**; influence of tocopherols and cod-liver oil on the stability of milk, **1833**; effect of α-tocopherol upon progestational proliferation in the rabbit, **2168**; significance of protein in deficiency, **2324**; serum level of cows and horses in relation to reproduction, **2331**; response of swine to deficient rations, **2332**; effect in "baby pig disease", **2333**; effect of ovarian hormones upon uterine pigmentation in deficient rats, **2334**; histochemistry of uterine pigment in deficient rats, **2335**; uterine and vaginal changes in deficient rats, **2336**; comparison of fatal tocopherol deficiency and carbon tetrachloride poisoning in rats, **2337**; chemical and enzymic alterations in muscles in experimental dystrophy, **2338**; studies on deficiency in monkeys, **2648**.
Vitamin K. Coagulation defect of vitamin K deficiency compared with that of dicumarol, **803**; dicumarol and synthetic anti-vitamins K, **804**; fungistatic activity of vitamin K on dermatophytes, **983**; in vitro inhibition of M. tuberculosis by vitamin K analogues, **1598**; treatment of dicumarol-induced hypoprothrombinaemia in dogs with vitamin K, administered intravenously, **3295**.
VOLE BACILLUS. See Mycobacterium Tuberculin, general.
VOMITING. A model for demonstration of the mechanics of rumination and vomiting, **2758**.
VULVA. See Genital System, vulva.

W

WALKABOUT DISEASE. In horses in Australia, **272**, **273**, **274** and **3412**.
WARBLES. See Oestridae, Hypoderma.
WARFARE. Agents of chemical warfare, **820**.
See also Atomic Energy; Lewisite; Mustard Gas.
"WARFARIN." See Vermin Control.
WATER. Polluted water causing unthriftiness in racehorses, **577**; fluid therapy for the dehydrated animal, **1127**; possible significance of milk and water in spread of virus diseases, **1179**; well-water methaemoglobinaemia in infants, **1796**; bacterial content and role in dissemination of diseases, **2163**; use of electron microscope in water treatment control, **2186**; movement of water in interstitial tissue and in muscle removed from the body, **2400**; adrenal cortex and water metabolism, **2703**.
See also Metabolism; Nutrition, general; Physiology; Sodium Chloride.
WATER DROPWORT. See Poisons and Poisoning.
WEED KILLER. See Poisons and Poisoning.
WEIGHT. In relation to intrarenal pressure, **2149**.
WEST INDIES. See Lice.
WETTING AGENTS. See Surface-Active Agents.
WHALES. Bacteriology of whale meat, **229**; A.C.T.H. content of the hypophysis, **3051**; role of veterinary surgeon in whaling industry, **3729**.
"WHITE MUSCLE" DISEASE. In U.S.A., **2784**.
WHOOPING COUGH. See Haemophilus Pertuosis.
WILD ANIMALS AND BIRDS. See Antelopes; Armadillo; Babesia Infection [Piroplasmosis], general; Bats; Chinchillas; Clostridium Botulinum Intoxication [Botulism]; Crows; Deer; Diseases, General; Elephants; Encephalitis, Japanese B; Encephalomyelitis, Porcine; Foxes; Hedgehogs; Hyrax; Jackals; Lions; Marmots; Monkeys; Moose; Newcastle Disease; Pasteurella Infection, general; Phalangers; Pheasants; Quail; Rabies, in wild animals; Rats; Squirrels; Trypanosoma Infection, treatment and control; Whales; Wild Pigs; Zoological Gardens.
WILDEBEEST. See Antelopes.
WILD PIGS. Destruction of wild pigs by poisoned baits, in New Zealand, **3106**.
WOHLFAHRTIA. Occurrence in Turkey of W. magnifica, **3260**.
WOOL. Inheritance of dominant pigmentation in Portuguese fine wool sheep, **2178**.
WORLD HEALTH ORGANISATION. See Organisations, International.
WOUNDS. Studies on anaerobic wound infection, **1958**; combined penicillin-sulphonamide treatment in dogs, **2989**; healing with desoxycorticosterone acetate, **3334**; healing with "trephoned" serum, **3707**.
See also Clostridium Botulinum Intoxication.
WUCHERERIA. See Filariasis.

X

X-DISEASE. See Hyperkeratosis, Bovine.
X-RAYS. Effect on amount of circulating antibodies, **750**; attempt to detect a mammary tumour agent in strain C mice by X radiation, **1062**; effect of X-rays on the agent of chicken tumour (rous sarcoma), **1430**; penicillin-screened auxotrophic mutations in S. typhi-murium and X-ray dosage, **1630**; effect on the testis, **2315**; pregnancy diagnosis in ewes, **2418**; X-ray diffraction studies on bone tissue during hyperparathyroidism, **2994**; induced pregnancy in a bitch following severe total body X-irradiation, **3085**; properties of X-ray-inactivated bacteriophage, **3251**; effects on Trichinella larvae, **3273**; for diagnosis of disc protrusion in dogs, **3687**.
See also Bones.
XANTHIUM. Poisoning of cattle in Australia, **3412**.
See also Poisons and Poisoning.
XERUS ERYTHROPUS. See Squirrels.

Y

YEASTS. Effect of heparin on the growth of bacteria and yeasts, **1661**; preservation by desiccation, **2444**; book, yeasts and moulds, **2524**; rachitogenic effect in pig diets, **2643**.
See also Candida; Committees, Conferences and Congresses.
"YELLOW FAT" DISEASE. Nutritional deficiences in mink—haemorrhagic gastroenteritis, yellow fat and anaemia, **156**; peroxidation and yellow-brown pigment in fat of vitamin E deficient rats, **1161**; aetiology, **2321**.
YOLK SAC. See Foetus.
YOUNGSTOCK DISEASES.
General. Non-infectious diseases, **160**; iron metabolism during suckling, **2385**; diseases of new-born animals, **3311**.
See also Haemolytic Diseases; Hernia; Hydrocephalus; Urinary System, diseases; under names of adult animals.
Calves. Diseases of young dairy stock, **161**; vitamin supplements for new-born calves, **1440**; sulphathalidine in the prevention and treatment of calf diarrheoa, **2352**.
See also Ascaris Vitulorum; Fasciola; Vitamins, vitamin B_1.
Foals. Helminths parasites in foals, **437**; aureomycin for septicaemic infections of newborn foals, **3004**.
Kids. Infection in kids resembling infective hepatitis, **1103**; goitre and myxoedema in new-born goats, **2093**.
Lambs. Streptococcal endocarditis in lambs, **296**; infant lamb mortality, **1780**; "Bent-leg" in lambs, **1781**.
See also Copper; Vitamins, vitamin B_1; "White Muscle" Disease.
Piglets. Diseases of piglets, **490**; book, mortality in young pigs, **1571**; causes and control of piglet mortality in Bavaria, **2094**; otitis in piglets, **2096**; heredity and constitutional diseases of piglets, **2170**; congenital Japanese B encephalitis in swine, **2276**; effect of tocopherols on vitality of pigs in relation to "baby pig disease", **2333**.
See also Broncho-Pneumonia, Enzootic, in piglets; Vitamins, vitamin B complex; vitamin B_6; Influenza, in swine.
YUGOSLAVIA. See Encephalomyelitis, Porcine; Goats; "Mraclin" Disease; Poisons and Poisoning, plant poisoning; Reports, Yugoslavia.
ZANZIBAR PROTECTORATE. See Reports, East Africa.
ZEBU CATTLE. Santa Gertrudis beef cattle breed of Texas, **1204**; crossbred types of beef cattle, **1547**; the hump of zebu and zebu crosses, **3753**; ages at which permanent incisors appear in zebu cattle in Brazil, **3754**.
ZEIN. See Agene.
ZEO-KARB 225. See Cation-Exchange Resin.
ZINC. The zinc turbidity test and its clinical application, **1788**; attempts to produce fatal syncope in pigs by feeding zinc, **2662**.
ZOOLOGICAL GARDENS. Wild animals in captivity, biology of zoological gardens, **1902**.
ZOOTECHNY. Sheep husbandry and nutrition in N.S.W., **237**; pig production, **256**; breeding of g. pigs, **257**; causes of deterioration of cattle in India, **469**; animal husbandry in relation to preventive medicine, **578**; sheep management on needlegrass ranges, **579**; comfort and increased feed consumption in cows in summer, **596**; training of hide inspectors and flaying instructors, **597**; milking before calving, **885**; Soviet three-year plan for stock improvement, **1203**; experiments on milking technique, **1206**; factors affecting rate of machine milking, **1207**; Soviet three-year animal husbandry plan, **1225**; book, sheep management and diseases, **1242**; supervision of bulls used for artificial insemination, **1531**; sex-ratio of calves produced by natural and by artificial insemination, **1532**; delayed breeding and fertility of beef heifers, **1542**; earmarking tail-docking and castration of lambs, **1550**; agriculture, husbandry, veterinary service, epizootics abattoirs and export in the Argentine, **1556**; control of TB. by breeding, **1588**; natural breeding in cattle, **1868**; guide for Russian veterinarians in three-year animal husbandry plan, **1871**; genetics and animal improvement as illustrated by the inheritance of egg production, **1901** and **3123**; productivity of crosses between Yugoslav and Saanen goats, **2179**; age at first calving in relation to subsequent performance, **2434**; book, breeding for production, **2800**; handling of animals and first aid, **2802**; cattle shades, **3069**; book, **3124**; book, husbandry, **3125**; book, colour and markings of the horse, **3126**; book, practical

ZOOTECHNY—[cont'd.]
farriery, **3131**; and the Michurin theory in the U.S.S.R., **3395**; development of animal husbandry in the U.S.S.R., **3396**; animal husbandry aspects of calf-rearing, **3398**; cattle breeding in Cyrenaica, **3399**; beef cattle investigations in Texas, **3400**; breeding efficiency of English Thoroughbred horses in Brazil, **3746**; increased beef production, **3752**; role of thyroidal materials and synthetic goitrogens in animal production, **3755**; book, breeds, rearing and disease of rabbits, **3758**.
See also Abattoirs; Castration; Climate; Dehorning; Docking; Eggs, Hen; Heredity; Licks; Metabolism; Milking Machines; Services, Veterinary; Shearing; Skin; Slaughter; Stunning; Technique and Apparatus, Zootechnical; Teeth; Temperature, environmental; Zebu Cattle.

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p.38. Abst. **198**. Line 4 of title. For "Swedish summary", please read "Danish summary".

p.628. Abst. **2987**. For "SCHWEIZER, Z. VON R.", please read "SCHWEIZER, R.".

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